ELECTRONIC EQUIPMENT MODIFICATION HANDBOOK-
NEXT GENERATION WEATHER RADAR (NEXRAD)

DOPPLER METEOROLOGICAL RADAR
WSR-88D

PUBLISHED UNDER AUTHORITY OF THE SECRETARIES OF
COMMERCE, THE AIR FORCE, THE NAVY, AND TRANSPORTATION

Issuance Date: 4 May , 2000

FAA APPROVAL:

Thu May 04 10:17:05 2000

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1. SUBJECT

Installation of the NEXRAD Remote Monitoring Subsystem (RMS).

2. PURPOSE

This modification provides procedures to install a Remote Monitoring Subsystem to the WSR-88D (NEXRAD) equipment. This modification is issued as a result of Operational Support Facility (OSF) Engineering Change Proposal (ECP) F0078 FAA Remote Monitoring Subsystem.

For additional information concerning this modification, contact the National Airway Systems Engineering Division, AOS-200, Operational Support, Weather Products Branch, AOS-250, at phone number: (405) 954-8427.

3. SITES AFFECTED

This modification applies to all FAA owned WSR-88D NEXRAD facilities.

4. ESTIMATED COMPLETION DATE

The completion of this modification will be dependent on the installation schedule as agreed upon by each region, the site personnel, and AOS-250.

5. EQUIPMENT AFFECTED

The NEXRAD Transmitter, Radar Data Acquisition (RDA), Receiver, Radar Products Generation (RPG), radome, main shelter and power shelter.

6. SPARES AFFECTED

None.

7. MODIFICATION ACCOMPLISHED BY

The National Airway Systems Engineering Division, AOS-200, Operational Support, Weather Products Branch, AOS-250 personnel will perform the modification.

8. MATERIAL REQUIRED

The material required for the installation of the new system will be supplied by the National Airway Systems Engineering Division, AOS-200, Operational Support, Weather Products Branch, AOS-250.

9. SOURCE OF MATERIALS

The material required for the installation of the new system will be supplied by the National Airway Systems Engineering Division, AOS-200, Operational Support, Weather Products Branch, AOS-250 and delivered to the address specified by the site.

10. SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED

None.

11. TIME AND PERSONNEL REQUIRED

Approximately four weeks will be required for the AOS-250 personnel to install this modification.

12. DOCUMENTS AFFECTED

All revised instruction book pages have been distributed under separate cover from the NLSC and apply to all FAA WSR-88D RDA and RPG sites. If changes have been incorporated, no action is required.

13. VERIFICATION STATEMENT

This modification has been verified at the South Kauai NEXRAD facility.

14. DISPOSITION OF REMOVED AND REPLACED PARTS/MATERIAL

The AOS-250 personnel will return transmitter backplanes to the National Repair Center (NRC).

15. PROCEDURES

See attachment 1 for the procedures.

16. FAA DISTRIBUTION

This directive is distributed to selected offices and services within Washington headquarters, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, regional Airway Facilities divisions, and Airway Facilities field offices having the following facilities/equipment: NXRAD.

17. CHANGES TO TABLE OF CONTENTS (FAA)

This chapter will be included in the next revision to the table of contents for FAA Order 6345.1, Electronic Equipment Modification Handbook - Next Generation Weather Radar (NEXRAD).

18. RECOMMENDATIONS FOR CHANGES (FAA)

Forward any recommendations for changes to this directive through normal channels to the National Airway Systems Engineering Division, AOS-200, Operational Support.

19. REPORTING INSTRUCTIONS

Enter this document number, date, and chapter number on the appropriate FAA Form 6032-1, Airway Facilities Modification Record.

Use the Maintenance Management System (MMS) application Log Equipment Modification (LEM) function to report the completion of this modification. Verify N is in the REP COD field to ensure the log entry will be upward reportable to the national data base for access by AOS. This directive should be entered into the LEM fields as follows:

(1) Order No: 6345.1

(2) Chapter: 18

(3) Change: 21

ATTACHMENT 1

MODIFICATION PROCEDURES

1. GENERAL.

a. Daily coordination shall be made with the local site's National Weather Service (NWS) and Maintenance Control Center (MCC) informing them of possible channel changes and/or outages.

b. Sites operating under the 3650 Rotary Uninterruptible Power Supply (RUPS), must be placed in bypass mode if the RDA software is to be restarted or if the RDASOT is to be ran on either the on-line or off-line RDA.

c. Complete each section of installation before beginning another section. Both channels of the radar shall be operating normally before leaving the site each day.

d. Perform the installation on one channel/unit at a time. After a channel is completed, repeat the steps to install the second channel.

2. REFERENCES.

a. Instruction Book TI 6345.1, Maintenance Instructions for Radar Data Acquisition (RDA), Doppler Meteorological Radar WSR-88D, Volume 7, (NWS EHB 6-510).

b. Instruction Book TI 6345.1, Operations and Maintenance Instructions, Transmitter System, Doppler Meteorological Radar WSR-88D, Volume 8,(NWS EHB 6-511).

c. Instruction Book TI 6345.1, Maintenance Instructions Radar Product Generation (RPG) Doppler Meteorological Radar WSR-88D, Volume 11, (NWS EHB 6-520).

3. BASELINE TRANSMITTER.

a. Equipment, tools and supplies required:

	Description	Quantity
(1)	RMS printer	1
(2)	RMS printer power cable	1
(3)	RMS printer communications cable	1
(4)	Printer paper, 8 ½ x 11-inch	100 sheets
(5)	Labels for waveform printouts	1
(6)	Oscilloscope	1
(7)	Oscilloscope probes	4
(8)	Cable, BNC-to-BNC, RG58, 6 to 8 feet	2

	Description	Quantity
(9)	Crystal detector	1
(10)	Termination, 50 ohm, BNC type	1
(11)	BNC T-connector	1
(12)	SMA male-to-N female adapter	1
(13)	SMA male-to-BNC female adapter	1
(14)	Torque wrench, 5/16-inch, 5-15 inch-pounds	1

b. Record data from the following steps in the Pre-Mod Results column of TABLE 1: CHANNEL 1 TRANSMITTER BASELINE (for channel 1) beginning on page A7 or TABLE 2: CHANNEL 2 TRANSMITTER BASELINE (for channel 2) beginning on page A12.

c. Channel setup.

(1) Ensure that the channel of the transmitter being baselined is the controlling channel.

(2) Ensure that the transmitter is operating free of alarms and all critical parameters within specified operating ranges.

(3) Ensure that Volume Coverage Pattern (VCP) 21 is operating.

(4) Ensure that the channel is in the OPERATE mode.

(5) Allow the system to operate for at least one VCP.

(6) Record the observations identified in 3.c(6)1 through 3.c(6)4 of the table. If any results in 3.c(6).1 through 3.c(6).3 are YES then repair the transmitter before continuing.

d. From the MMI main menu display the transmitter performance data by entering the command **DIPD** with **XMT** parameter. Record the transmitter peak power and antenna peak power data for steps 3.d.1 and 3.d.1. Return to the main menu on the MMI by entering the **MAIN** command.

e. Change the channel being baselined to be the non-controlling channel.

(1) Coordinate with the NWS office for the channel change.

(2) Switch channels so that the channel under test is the redundant channel and the other channel is in control and operating.

f. Place the RUPS into bypass mode to protect the RUPS from a power overload.

(1) In the power shelter on the Auto Bypass System Control Panel, press the **ALARM ENABLE** switch to **OFF**.

(2) Press the **BYPASS** switch to **MANUAL**. The System Bypassed lamp will turn on.

(3) On the Rosselle Control Panel, press the **STOP** button.

(4) Wait 5 seconds, then press the **START** button. The Input, Input Avail, Output Avail lamps are lit. The Output lamp is not lit.

g. Start the RDASOT program in *SHORT PULSE WIDTH* with a *PRF of 5* and inject a signal by performing steps 1 through 15 of TI 6345.1, Operations and Maintenance Instructions Transmitter System, volume 8, paragraph 3.4.1.3.

h. Record transmitter power supply voltages and currents using the five equipment meters located on the transmitter control panel A1. Record the data in steps 3.h.1 through 3.h.21 in the table. Return the VOLTAGE/CURRENT meter A1M4 selector switch S9 to OFF (position 16) after use. See TI 6345.1, volume 8, paragraph 6.5.1 and table 6-1 for additional information.

i. Turn OFF the test signal by pressing **<Return>** to get back to the menu and then entering **0 <Return>** to turn Off the test signal and return to the testsig source selection menu.

j. Connect the RMS printer to the oscilloscope.

k. PFN voltage measurement, A12TP1.

WARNING

To perform this measurement procedure, the transmitter high voltage must be on while the transmitter control panel door is open. Use the grounding stick to discharge the terminals before making test connections. Use extreme caution when transmitter power is on. Failure to use caution could result in serious injury or death.

(1) Connect oscilloscope to modulator pulse assembly test point A12TP1.

(2) In RDASOT, enter **4 <Return>** for Klystron Output Source.

(3) Enter **1 <Return>** to inject signal.

(4) See TI 6345.1, volume 8, figure 6-15. Adjust the oscilloscope to display similar image (2 v/division, 500 μs). Print the image and label with the proper label. Save recorded waveforms for test report.

(5) Record the PFN voltage waveform peak value for step 3.k(5).1.

(6) Turn OFF the test signal by pressing **<Return>** to get back to the menu and then entering **0 <Return>** to turn OFF the test signal and return to the testsig source selection menu.

(7) Remove the A12TP1 oscilloscope probe.

l. Modulator short mode trigger timing relationships.

ATTACHMENT 1 (CONTINUED)

MODIFICATION PROCEDURES

(1) Connect oscilloscope probes as follows: Channel 1 to Modulator Charge Trigger at A11TP4, Channel 2 to MTA Charge Trigger at A10TP6, Channel 3 to Modulator Discharge Trigger at A11TP6, and Channel 4 at Modulator Regulator Trigger at A8TP2.

NOTE

The following waveform checks are made with high voltage OFF.

(2) See TI 6345.1, volume 8, figure 6-3. Adjust oscilloscope to display similar image. Print the image and label with the proper label. Save recorded waveforms for test report.

(3) Compare output with TI 6345.1, volume 8, figure 6-3 and record results for step 3.l(3).1.

(4) Remove the oscilloscope probes from the test (leaving the T_o probe connected).

m. Modulator test points waveforms.

(1) See TI 6345.1, volume 8, paragraph 6.5.2.3 and table 6-2 for additional information. For each test point listed in steps 3.m(1)(e).1 through 3.m(1)(e).11 of the table, perform the following:

(a) Connect to oscilloscope to the test point.

(b) In RDASOT, enter **4 <Return>** for Klystron Output Source.

(c) Enter **1 <Return>** to inject signal.

(d) Refer to the figure in TI 6345.1, volume 8 referenced in the waveform column of Table 6-2.. Adjust oscilloscope to display similar image. Print the image and label with the proper label. Save recorded waveforms for test report.

(e) Compare output with the waveformand record results for step 3.m(1)(e).”x”.

(f) Turn OFF the test signal by pressing **<Return>** to get back to the menu and then entering **0 <Return>** to turn OFF the test signal and return to the testsig source selection menu.

n. RF driver.

NOTE

The SMA coupling nuts should be torqued to 8 ± 1 inch-pounds.

(1) Disconnect A4AT2 (center transmitter cabinet, top right area) and use the SMA male-to-N female adapter to connect oscilloscope input (set to 50-ohm input impedance) through crystal detector to RF driver input test point A4J3.

(2) In RDASOT, enter **4 <Return>** for Klystron Output Source.

(3) Enter **1 <Return>** to inject signal.

(4) Compare output with TI 6345.1, volume 8, figure 6-1(a) and record results for step 3.n(4).

(5) Print the image and label with the proper label. Save recorded waveforms for test report.

(6) Turn OFF the test signal by pressing **<Return>** to get back to the menu and then entering **0 <Return>** to turn OFF the test signal and return to the testsig source selection menu.

(7) Disconnect the test equipment and replace A4AT2.

(8) Disconnect A4AT3 and use the same SMA male-to-N female adapter to connect oscilloscope input (set to 50-ohm input impedance) through crystal detector to RF driver output test point A4J5.

(9) In RDASOT, enter **4 <Return>** for Klystron Output Source.

(10) Enter **1 <Return>** to inject signal.

(11) Compare output with TI 6345.1, volume 8, figure 6-1(b) of and record results for step 3.n(11).

(12) Print the image and label with the proper label. Save recorded waveforms for test report.

(13) Turn OFF the test signal by pressing **<Return>** to get back to the menu and then entering **0 <Return>** to turn OFF the test signal and return to the testsig source selection menu.

(14) Disconnect test equipment and replace A4AT3.

o. Pulse shaper waveforms.

NOTE

The SMA coupling nuts should be torqued to 8 ± 1 inch-pounds.

(1) Disconnect W105P2 and use the SMA-to-BNC adapter to connect oscilloscope input (set to 50-ohm input impedance) through crystal detector to pulse shaper output test point A5J4.

(2) In RDASOT, enter **4 <Return>** for Klystron Output Source.

(3) Enter **1 <Return>** to inject signal.

(4) Compare output with TI 6345.1, volume 8, figure 7-7 and record results for step 3.o(4).

(5) Print the image and label with the proper label. Save recorded waveforms for test report.

(6) Turn OFF the test signal by pressing **<Return>** to get back to the menu and then entering **0 <Return>** to turn OFF the test signal and return to the testsig source selection menu.

(7) Disconnect test equipment and replace W105P2.

ATTACHMENT 1 (CONTINUED)

MODIFICATION PROCEDURES

p. Terminate the RDASOT program by performing steps 1 through 4 of TI 6345.1, volume 8, paragraph 3.4.1.4.

q. Start the RDA Application program by performing steps 3a through 3e of TI 6345.1, volume 8, paragraph 3.4.1.5.

r. Bring the RUPS out of bypass mode and into normal loaded mode.

(1) On the Rosselle Control Panel, press the **LOAD** button. The Input, Input Avail, Output Avail and Output lamps are lit.

(2) In the power shelter on the Auto Bypass System Control Panel, press the **BYPASS** switch to **AUTO**. The System Bypassed lamp will turn OFF.

(3) Press the **ALARM ENABLE** switch to **ON**.

MODIFICATION PROCEDURES

TABLE 1: CHANNEL 1 TRANSMITTER BASELINE

Reference Paragraph	Instruction	Channel 1 XMTR Pre-Mod Results	Channel 1 XMTR Post-Mod Results	Significant Deviations?	Units
	Record Site Name, Date and initial				Volts
3.c(6).1	Observe the transmitter alarm panel. Are any alarms currently indicated?	Yes ____ No ____	Yes ____ No ____		
3.c(6).2	Is the transmitter recycling?	Yes ____ No ____	Yes ____ No ____		
3.c(6).3	Has the transmitter gone into INOP mode?	Yes ____ No ____	Yes ____ No ____		
3.c(6).4	Are any non-fatal alarms noted? IF yes, note the alarm(s)	Yes ____ No ____	Yes ____ No ____		
3.d.1	DIPD XMT - Antenna Peak Power			Yes ____ No ____	KW
3.d.2	DIPD XMT – Transmitter Peak Power			Yes ____ No ____	KW
3.h.1	Filament Current (A1M1)			Yes ____ No ____	A
3.h.2	Filament Current within +/- 0.5 A of nameplate value	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	A
3.h.3	Focus Coil Current (A1M2)			Yes ____ No ____	A

3.h.4	Focus Coil Current within +/- 0.5 A of nameplate value	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	A
3.h.5	Vacuum Pump Power current (A1M3)			Yes ____ No ____	µA
3.h.6	Vacuum Pump Power current less than 20 µA	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.h.7	PS6 (+5.0V) (A1M4/1)			Yes ____ No ____	Volts
3.h.8	PS4 (+15.0V) (A1M4/2)			Yes ____ No ____	Volts
3.h.9	PS5 (-15.0V) (A1M4/3)			Yes ____ No ____	Volts
3.h.10	PS3 (+28.0V) (A1M4/4)			Yes ____ No ____	Volts
3.h.11	PS7 (+45.0V) (A1M4/5)			Yes ____ No ____	Volts
3.h.12	Filament PS Voltage (50.0-80.0V) (A1M4/7)			Yes ____ No ____	Volts
3.h.13	Filament Volt (nameplate +/- 0.2V) (A1M4/8)			Yes ____ No ____	Volts
3.h.14	Focus Coil PS Volt (40-80V) (A1M4/9)			Yes ____ No ____	Volts
3.h.15	Vacuum pump PS Volt (2750-3200V) (A1M4/10)			Yes ____ No ____	Volts
3.h.16	Cathode Current (52-98 mA) (A1M4/11)			Yes ____ No ____	mA

MODIFICATION PROCEDURES

3.h.17	Beam Voltage (60-80 KV) (A1M4/12)			Yes ____ No ____	KV
3.h.18	Mod inverse Current (50 mA max) (A1M4/13)			Yes ____ No ____	mA
3.h.19	PFN Charge Current (2-5 amp) (A1M4/14)			Yes ____ No ____	A
3.h.20	Regulator Current (0-45mA) (A1M4/15)			Yes ____ No ____	mA
3.h.21	PFN voltage (A1M5)			Yes ____ No ____	Volts
3.k(5).1	PFN voltage peak value (A12TP1) (o-scope x 1000)	Voltage___ Yes ____ No ____	Voltage___ Yes ____ No ____	Yes ____ No ____	Volts
3.l(3).1	Mod Trigger Timing Results comparable?	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).1	Proximity Beam Voltage A7A1TP1 Figure 6-2	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).2	Beam (Cathode) Current (pulse) Sample A7A1TP2 Figure 7-10	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).3	Transistor Collector Voltage (PFN) A8A1TP1 And Post Charge Regulator Current A8A1TP3 Figure 7-4	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	

3.m(1)(e).4	Post Charge Regulator Amplifier A8TP5 Figure 6-4	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).5	Charging Switch On Drive A10TP1 AND Off-Drive A10TP2 Figure 6-5	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	
3.m(1)(e).6	Charging Switch Peak Primary Current A10TP7 Figure 6-7	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).7	Trigger Amplifier On-Drive A11TP2 And Off-Drive A11TP5 Figure 6-7	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	
3.m(1)(e).8	Trigger Amp Primary Current A11TP8 Figure 6-8	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).9	Trigger Amp Storage Capacitor A11TP11 Figure 6-9	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).10	Trigger Amp RBDT Stack Voltage Waveform A11TP14 Figure 6-10	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	

MODIFICATION PROCEDURES

3.m(1)(e).11	Klystron Cathode Voltage A12TP2 Figure 6-11	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.n(4)	RF Driver Input A4J3 Figure 6-1(a)	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.n(11)	RF Driver Output A4J5 Figure 6-1(b)	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.o(4)	Pulse Shaper Output A5J4 Figure 7-7	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	

ATTACHMENT 1 (CONTINUED)

MODIFICATION PROCEDURES

TABLE 2: CHANNEL 2 TRANSMITTER BASELINE

Reference Paragraph	Instruction	Channel 2 XMTR Pre-Mod Results	Channel 2 XMTR Post-Mod Results	Significant Deviations?	Units
	Record Site Name, Date and initial				
3.c(6).1	Observe the transmitter alarm panel. Are any alarms currently indicated?	Yes ____ No ____	Yes ____ No ____		
3.c(6).2	Is the transmitter recycling?	Yes ____ No ____	Yes ____ No ____		
3.c(6).3	Has the transmitter gone into INOP mode?	Yes ____ No ____	Yes ____ No ____		
3.c(6).4	Are any non-fatal alarms noted? IF yes, note the alarm(s)	Yes ____ No ____	Yes ____ No ____		
3.d.1	DIPD XMT - Antenna Peak Power			Yes ____ No ____	KW
3.d.2	DIPD XMT – Transmitter Peak Power			Yes ____ No ____	KW
3.h.1	Filament Current (A1M1)			Yes ____ No ____	A
3.h.2	Filament Current within +/- 0.5 A of nameplate value	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	A
3.h.3	Focus Coil Current (A1M2)			Yes ____ No ____	A

MODIFICATION PROCEDURES

3.h.4	Focus Coil Current within +/- 0.5 A of nameplate value	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	A
3.h.5	Vacuum Pump Power current (A1M3)			Yes ____ No ____	μA
3.h.6	Vacuum Pump Power current less than 20 μA	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.h.7	PS6 (+5.0V) (A1M4/1)			Yes ____ No ____	Volts
3.h.8	PS4 (+15.0V) (A1M4/2)			Yes ____ No ____	Volts
3.h.9	PS5 (-15.0V) (A1M4/3)			Yes ____ No ____	Volts
3.h.10	PS3 (+28.0V) (A1M4/4)			Yes ____ No ____	Volts
3.h.11	PS7 (+45.0V) (A1M4/5)			Yes ____ No ____	Volts
3.h.12	Filament PS Voltage (50.0-80.0V) (A1M4/7)			Yes ____ No ____	Volts
3.h.13	Filament Volt (nameplate +/- 0.2V) (A1M4/8)			Yes ____ No ____	Volts
3.h.14	Focus Coil PS Volt (40-80V) (A1M4/9)			Yes ____ No ____	Volts
3.h.15	Vacuum pump PS Volt (2750-3200V) (A1M4/10)			Yes ____ No ____	Volts
3.h.16	Cathode Current (52-98 mA) (A1M4/11)			Yes ____ No ____	mA

ATTACHMENT 1 (CONTINUED)

MODIFICATION PROCEDURES

3.h.17	Beam Voltage (60-80 KV) (A1M4/12)			Yes ____ No ____	KV
3.h.18	Mod inverse Current (50 mA max) (A1M4/13)			Yes ____ No ____	mA
3.h.19	PFN Charge Current (2-5 amp) (A1M4/14)			Yes ____ No ____	A
3.h.20	Regulator Current (0-45mA) (A1M4/15)			Yes ____ No ____	mA
3.h.21	PFN voltage (A1M5)			Yes ____ No ____	Volts
3.k(5).1	PFN voltage peak value (A12TP1) (o-scope x 1000)	Voltage___ Yes ____ No ____	Voltage___ Yes ____ No ____	Yes ____ No ____	Volts
3.l(3).1	Mod Trigger Timing Results comparable?	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).1	Proximity Beam Voltage A7A1TP1 Figure 6-2	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).2	Beam (Cathode) Current (pulse) Sample A7A1TP2 Figure 7-10	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).3	Transistor Collector Voltage (PFN) A8A1TP1 And Post Charge Regulator Current A8A1TP3 Figure 7-4	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	

MODIFICATION PROCEDURES

3.m(1)(e).4	Post Charge Regulator Amplifier A8TP5 Figure 6-4	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).5	Charging Switch On Drive A10TP1 AND Off-Drive A10TP2 Figure 6-5	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	
3.m(1)(e).6	Charging Switch Peak Primary Current A10TP7 Figure 6-7	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).7	Trigger Amplifier On-Drive A11TP2 And Off-Drive A11TP5 Figure 6-7	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	Yes ____ No ____ Yes ____ No ____	
3.m(1)(e).8	Trigger Amp Primary Current A11TP8 Figure 6-8	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).9	Trigger Amp Storage Capacitor A11TP11 Figure 6-9	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.m(1)(e).10	Trigger Amp RBDT Stack Voltage Waveform A11TP14 Figure 6-10	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	

3.m(1)(e).11	Klystron Cathode Voltage A12TP2 Figure 6-11	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.n(4)	RF Driver Input A4J3 Figure 6-1(a)	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.n(11)	RF Driver Output A4J5 Figure 6-1(b)	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	
3.o(4)	Pulse Shaper Output A5J4 Figure 7-7	Yes ____ No ____	Yes ____ No ____	Yes ____ No ____	

MODIFICATION PROCEDURES

4. BASELINE RCVR.

a. Equipment, tools and supplies required:

	Description	Quantity
(1)	Screwdriver set, Phillips	1
(2)	RMS Printer	1
(3)	RMS printer power cable	1
(4)	RMS printer communications cable	1
(5)	Printer paper, 8 ½ by 11-inch	100 sheets
(6)	Labels for waveform printouts	1
(7)	Oscilloscope	1
(8)	Oscilloscope probes	4
(9)	Cable, BNC-to-BNC, RG58, 6 to 8 feet	2
(10)	Crystal detector	1
(11)	Termination, 50 ohm, BNC type	1
(12)	BNC T-connector	1
(13)	SMA male-to-N female adapter	1
(14)	SMA male-to-BNC female adapter	1
(15)	Torque wrench, 5/16-inch open end, 5-15 in. lbs.	1

b. Record data from the following steps in the Pre-Mod Results column of TABLE 3: CHANNEL 1 RECEIVER BASELINE (for channel 1) beginning on page A21 or TABLE 4: CHANNEL 2 RECEIVER BASELINE (for channel 2) beginning on page A29.

c. Channel setup.

(1) Ensure that the channel of the receiver being baselined is the controlling channel.

(2) Ensure that the receiver is operating free of alarms and all critical parameters within specified operating ranges.

(3) Ensure that Volume Coverage Pattern (VCP) 21 is operating.

(4) Ensure that the channel is in the OPERATE mode.

(5) Allow the system to operate for at least one VCP.

d. From the MMI main menu display the calibration performance data and calibration check screens by entering the command **DIPD** with **CAL** parameter. Record the data for 4.d.1 through 4.d.66. To view all of the calibration performance data and the check screens, change to the next screen by entering the page forward command **PAGF**. Return to the main menu on the MMI by entering the **MAIN** command.

e. From the MMI main menu display the receiver/signal processor screen by entering the command **DIPD** with **REC** parameter. Record the data for 4.e.1 through 4.e.27. To view all of the calibration performance data and the check screens, change to the next screen by entering the page forward command **PAGF**. Return to the main menu on the MMI by entering the **MAIN** command.

f. From the status lines area of the MMI screen, record the system reflectivity calibration (SYSCAL) number CAL# for 4.f.1.

g. Change the channel being baselined to be the non-controlling channel.

(1) Coordinate with the NWS office for the channel change.

(2) Switch channels so that the channel under test is the redundant channel and the other channel is in control and operating.

h. Place the RUPS into bypass mode to protect the RUPS from a power overload.

(1) In the power shelter on the Auto Bypass System Control Panel, press the **ALARM ENABLE** switch to **OFF**.

(2) Press the **BYPASS** switch to **MANUAL**. The System Bypassed lamp turns on.

(3) On the Rosselle Control Panel, press the **STOP** button.

(4) Wait 5 seconds, then press the **START** button. The Input, Input Avail, Output Avail lamps are lit. The Output lamp is not lit.

i. Terminate the RDA application.

j. Perform receiver diagnostics. See TI 6345.1, Volume 7, Maintenance Instructions Radar Data Acquisition (NWS EHB 6-510), figure 6-3.2, note 16 for additional information.

(1) From the RDA system console, enter **RDASOT** to bring up RDASOT and display its main menu.

(2) Enter **2** for limited mode.

(3) Enter **2** to display the diagnostic menu.

(4) Enter **6** for RCVDIA Receiver Diagnostic menu.

(5) Enter **3** to select all subtests.

MODIFICATION PROCEDURES

NOTE

Subtest 17 Guardband (+) IF amplifier test and Subtest 18 Guardband (-) IF amplifier test are only performed at sites with the optional Interference Suppression Unit installed. If the ISU is not installed, deselect Subtests 17 and 18.

(6) Enter 1 to begin test execution.

(7) If any problems are reported by RDASOT then enter the failures in the table 4.j(7).1 through 4.j(7).2.

(8) Terminate RDASOT by repeatedly entering **0** until the program terminates.

(9) If any problems were reported by RDASOT then troubleshoot the system using the procedures in TI 6345.1, Volume 7, Maintenance Instructions Radar Data Acquisition (NWS EHB 6-510).

k. Measure and record receiver power supply outputs.

(1) Connect the RMS printer to the oscilloscope.

(2) Open the receiver front cabinet door.

WARNING

High voltages are present in or near this equipment when energized. Death on contact may result if personnel fail to observe proper safety procedures.

(3) Remove the screws holding all three power supply-mounted slides using the proper screwdriver.

(4) Slide the top power supply-mounted slide forward until the slide stops are engaged (a loud click will be heard).

(5) Attach the ground reference of the oscilloscope to the power supply-mounted slide rail.

(6) Attach a scope probe to +18V PS1 output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(6).

(7) Attach a scope probe to -18V PS1 output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label from item. Save recorded waveforms for test report. Record the -18V PS1 voltage peak value for step 4.k(7).

(8) Slide the top power supply-mounted slide and secure with the previously removed screws.

(9) Slide the center power supply-mounted slide forward until the slide stops are engaged (a loud click will be heard).

ATTACHMENT 1 (CONTINUED)

MODIFICATION PROCEDURES

(10) Attach a scope probe to +5V PS5 output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(10).

(11) Attach a scope probe to +9V output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label from item. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(11).

(12) Slide the center power supply-mounted slide and secure with the previously removed screws.

(13) Slide the lower power supply-mounted slide forward until the slide stops are engaged (a loud click will be heard).

(14) Attach a scope probe to +15V PS8 output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label from item. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(14).

(15) Attach a scope probe to -15V PS8 output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label from item. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(15).

(16) Attach a scope probe to +5V PS2 output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label from item. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(16).

(17) Attach a scope probe to +9V output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label from item. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(17).

(18) Attach a scope probe to +5.2V output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label from item. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(18).

(19) Attach a scope probe to +5V output and adjust oscilloscope to properly display the signal. Print the image and label with the proper label from item. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 4.k(19).

(20) Slide the lower power supply-mounted slide and secure with the previously removed screws.

(21) Remove all test equipment and close the receiver front cabinet door.

(22) Start the RDA Application program by performing steps 3a through 3e in TI 6345.1, volume 8, paragraph 3.4.1.5.

MODIFICATION PROCEDURES

TABLE 3: CHANNEL 1 RECEIVER BASELINE

Reference Paragraph	Instruction	Channel 1 RCVR Pre-Mod Results	Channel 1 RCVR Post-Mod Results	Significant Deviations?	Units
4.d.1	CW LIN TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.2	CW LIN TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.3	RFD1 LIN TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.4	RFD1 LIN TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.5	RFD2 LIN TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.6	RFD2 LIN TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.7	RFD3 LIN TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.8	RFD3 LIN TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.9	CW LOG TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.10	CW LOG TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.11	RFD1 LOG TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.12	RFD1 LOG TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.13	PHASE RAM1 EXPECTED VEL			Yes ____ No ____	m/s
4.d.14	PHASE RAM1 MEASURED VEL			Yes ____ No ____	m/s
4.d.15	PHASE RAM2 EXPECTED VEL			Yes ____ No ____	m/s

4.d.16	PHASE RAM2 MEASURED VEL			Yes ____ No ____	m/s
4.d.17	PHASE RAM3 EXPECTED VEL			Yes ____ No ____	m/s
4.d.18	PHASE RAM3 MEASURED VEL			Yes ____ No ____	m/s
4.d.19	PHASE RAM4 EXPECTED VEL			Yes ____ No ____	m/s
4.d.20	PHASE RAM4 MEASURED VEL			Yes ____ No ____	m/s
4.d.21	PHASE RAM1 EXPECTED WIDTH			Yes ____ No ____	m/s
4.d.22	PHASE RAM1 MEASURED WIDTH			Yes ____ No ____	m/s
4.d.23	PHASE RAM2 EXPECTED WIDTH			Yes ____ No ____	m/s
4.d.24	PHASE RAM2 MEASURED WIDTH			Yes ____ No ____	m/s
4.d.25	RFD2 LOG TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.26	RFD2 LOG TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.27	RFD3 LOG TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.28	RFD3 LOG TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.29	SHORT PULSE, LIN CHAN SYSCAL			Yes ____ No ____	dB

4.d.30	SHORT PULSE, LOG CHAN SYSCAL			Yes ____ No ____	dB
4.d.31	LONG PULSE, LIN CHAN SYSCAL			Yes ____ No ____	dB
4.d.32	LONG PULSE, LOG CHAN SYSCAL			Yes ____ No ____	dB
4.d.33	AGC STEP 1 AMP			Yes ____ No ____	Db
4.d.34	AGC STEP 1 PHASE			Yes ____ No ____	Deg
4.d.35	AGC STEP 2 AMP			Yes ____ No ____	Db
4.d.36	AGC STEP 2 PHASE			Yes ____ No ____	Deg
4.d.37	AGC I/Q AMP BAL			Yes ____ No ____	
4.d.38	PHASE RAM3 EXPECTED WIDTH			Yes ____ No ____	m/s
4.d.39	PHASE RAM3 MEASURED WIDTH			Yes ____ No ____	m/s
4.d.40	PHASE RAM4 EXPECTED WIDTH			Yes ____ No ____	m/s
4.d.41	PHASE RAM4 MEASURED WIDTH			Yes ____ No ____	m/s
4.d.42	AGC STEP 3 AMP			Yes ____ No ____	Db
4.d.43	AGC STEP 3 PHASE			Yes ____ No ____	Deg

4.d.44	AGC STEP 4 AMP			Yes ____ No ____	Db
4.d.45	AGC STEP 4 PHASE			Yes ____ No ____	Deg
4.d.46	AGC STEP 5 AMP			Yes ____ No ____	Db
4.d.47	AGC STEP 5 PHASE			Yes ____ No ____	Deg
4.d.48	AGC STEP 6 AMP			Yes ____ No ____	Db
4.d.49	AGC STEP 6 PHASE			Yes ____ No ____	Deg
4.d.50	AGC I/Q PH BAL			Yes ____ No ____	Deg
4.d.51	KD1 LIN TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.52	KD1 LIN TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.53	KD2 LIN TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.54	KD2 LIN TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.55	KD3 LIN TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.56	KD3 LIN TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.57	KD1 LOG TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.58	KD1 LOG TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.59	KD2 LOG TGT EXPECTED AMP			Yes ____ No ____	dBZ

4.d.60	KD2 LOG TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.61	KD3 LOG TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.62	KD3 LOG TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.63	UNFILTERED LIN CHAN PWR			Yes ____ No ____	dB
4.d.64	FILTERED LIN CHAN PWR			Yes ____ No ____	dB
4.d.65	UNFILTERED LOG CHAN PWR			Yes ____ No ____	dB
4.d.66	FILTERED LOG CHAN PWR			Yes ____ No ____	dB
4.e.1	RF GEN FREQ SEL OSC	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.2	RF GEN RF STALO	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.3	PHASE SHIFTED COHO	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.4	COHO CLOCK	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.5	PARITY CF1	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.6	PARITY CF2	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.7	PARITY CF3	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	

4.e.8	PARITY CF4	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.9	PARITY CF5	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.10	PARITY CF6	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.11	PARITY TEST GEN RAM	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.12	SYSTEM NOISE TEMP			Yes ____ No ____	Deg K
4.e.13	PRT INTERVAL 1			Yes ____ No ____	
4.e.14	PRT INTERVAL 2			Yes ____ No ____	
4.e.15	SIG PROC +5V PS			Yes ____ No ____	V
4.e.16	SHORT PULSE, LIN CHAN NOISE			Yes ____ No ____	
4.e.17	SHORT PULSE, LOG CHAN NOISE			Yes ____ No ____	
4.e.18	LONG PULSE, LIN CHAN NOISE			Yes ____ No ____	
4.e.19	LONG PULSE, LOG CHAN NOISE			Yes ____ No ____	
4.e.20	IDU TST DETECTION			Yes ____ No ____	
4.e.21	+ 5V RECEIVER PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	

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4.e.22	±18V RECEIVER PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.22	- 9V RECEIVER PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.23	+ 9V RECEIVER PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.24	±15V A/D CONV PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.25	+ 5V A/D CONV PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.26	-5.2V A/D CONV PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.27	+ 5V REC PROT PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.f.1	CAL #			Yes ____ No ____	dB
4.j(7).1	RDASOT Receiver Diagnostic	PASS ____ FAIL ____	PASS ____ FAIL ____	Yes ____ No ____	
4.j(7).2	NOTES from RDASOT Receiver Diagnostics			Yes ____ No ____	
4.k(6)	+18 PS1			Yes ____ No ____	Volts
4.k(7)	-18 PS1			Yes ____ No ____	Volts
4.k(10)	+5V PS5			Yes ____ No ____	Volts

4.k(11)	-9V PS4			Yes ____ No ____	Volts
4.k(14)	+15V PS8			Yes ____ No ____	Volts
4.k(15)	-15V PS8			Yes ____ No ____	Volts
4.k(16)	+5V PS2			Yes ____ No ____	Volts
4.k(17)	+9V PS6			Yes ____ No ____	Volts
4.k(18)	-5.2V PS7			Yes ____ No ____	Volts
4.k(19)	+5V PS9			Yes ____ No ____	Volts

MODIFICATION PROCEDURES

TABLE 4: CHANNEL 2 RECEIVER BASELINE

Reference Paragraph	Instruction	Channel 2 RCVR Pre-Mod Results	Channel 2 RCVR Post-Mod Results	Significant Deviations?	Units
4.d.1	CW LIN TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.2	CW LIN TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.3	RFD1 LIN TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.4	RFD1 LIN TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.5	RFD2 LIN TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.6	RFD2 LIN TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.7	RFD3 LIN TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.8	RFD3 LIN TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.9	CW LOG TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.10	CW LOG TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.11	RFD1 LOG TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.12	RFD1 LOG TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.13	PHASE RAM1 EXPECTED VEL			Yes ____ No ____	m/s
4.d.14	PHASE RAM1 MEASURED VEL			Yes ____ No ____	m/s
4.d.15	PHASE RAM2 EXPECTED VEL			Yes ____ No ____	m/s

4.d.16	PHASE RAM2 MEASURED VEL			Yes ____ No ____	m/s
4.d.17	PHASE RAM3 EXPECTED VEL			Yes ____ No ____	m/s
4.d.18	PHASE RAM3 MEASURED VEL			Yes ____ No ____	m/s
4.d.19	PHASE RAM4 EXPECTED VEL			Yes ____ No ____	m/s
4.d.20	PHASE RAM4 MEASURED VEL			Yes ____ No ____	m/s
4.d.21	PHASE RAM1 EXPECTED WIDTH			Yes ____ No ____	m/s
4.d.22	PHASE RAM1 MEASURED WIDTH			Yes ____ No ____	m/s
4.d.23	PHASE RAM2 EXPECTED WIDTH			Yes ____ No ____	m/s
4.d.24	PHASE RAM2 MEASURED WIDTH			Yes ____ No ____	m/s
4.d.25	RFD2 LOG TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.26	RFD2 LOG TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.27	RFD3 LOG TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.28	RFD3 LOG TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.29	SHORT PULSE, LIN CHAN SYSCAL			Yes ____ No ____	DB

4.d.30	SHORT PULSE, LOG CHAN SYSCAL			Yes ____ No ____	DB
4.d.31	LONG PULSE, LIN CHAN SYSCAL			Yes ____ No ____	DB
4.d.32	LONG PULSE, LOG CHAN SYSCAL			Yes ____ No ____	DB
4.d.33	AGC STEP 1 AMP			Yes ____ No ____	Db
4.d.34	AGC STEP 1 PHASE			Yes ____ No ____	Deg
4.d.35	AGC STEP 2 AMP			Yes ____ No ____	Db
4.d.36	AGC STEP 2 PHASE			Yes ____ No ____	Deg
4.d.37	AGC I/Q AMP BAL			Yes ____ No ____	
4.d.38	PHASE RAM3 EXPECTED WIDTH			Yes ____ No ____	m/s
4.d.39	PHASE RAM3 MEASURED WIDTH			Yes ____ No ____	m/s
4.d.40	PHASE RAM4 EXPECTED WIDTH			Yes ____ No ____	m/s
4.d.41	PHASE RAM4 MEASURED WIDTH			Yes ____ No ____	m/s
4.d.42	AGC STEP 3 AMP			Yes ____ No ____	Db
4.d.43	AGC STEP 3 PHASE			Yes ____ No ____	Deg

4.d.44	AGC STEP 4 AMP			Yes ____ No ____	Db
4.d.45	AGC STEP 4 PHASE			Yes ____ No ____	Deg
4.d.46	AGC STEP 5 AMP			Yes ____ No ____	Db
4.d.47	AGC STEP 5 PHASE			Yes ____ No ____	Deg
4.d.48	AGC STEP 6 AMP			Yes ____ No ____	Db
4.d.49	AGC STEP 6 PHASE			Yes ____ No ____	Deg
4.d.50	AGC I/Q PH BAL			Yes ____ No ____	Deg
4.d.51	KD1 LIN TGT EXPECTED AMP			Yes ____ No ____	dBZ
4.d.52	KD1 LIN TGT MEASURED AMP			Yes ____ No ____	dBZ
4.d.53	KD2 LIN TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.54	KD2 LIN TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.55	KD3 LIN TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.56	KD3 LIN TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.57	KD1 LOG TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.58	KD1 LOG TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.59	KD2 LOG TGT EXPECTED AMP			Yes ____ No ____	DBZ

4.d.60	KD2 LOG TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.61	KD3 LOG TGT EXPECTED AMP			Yes ____ No ____	DBZ
4.d.62	KD3 LOG TGT MEASURED AMP			Yes ____ No ____	DBZ
4.d.63	UNFILTERED LIN CHAN PWR			Yes ____ No ____	DB
4.d.64	FILTERED LIN CHAN PWR			Yes ____ No ____	DB
4.d.65	UNFILTERED LOG CHAN PWR			Yes ____ No ____	DB
4.d.66	FILTERED LOG CHAN PWR			Yes ____ No ____	DB
4.e.1	RF GEN FREQ SEL OSC	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.2	RF GEN RF STALO	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.3	PHASE SHIFTED COHO	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.4	COHO CLOCK	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.5	PARITY CF1	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.6	PARITY CF2	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.7	PARITY CF3	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	

4.e.8	PARITY CF4	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.9	PARITY CF5	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.10	PARITY CF6	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.11	PARITY TEST GEN RAM	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.12	SYSTEM NOISE TEMP			Yes ____ No ____	Deg K
4.e.13	PRT INTERVAL 1			Yes ____ No ____	
4.e.14	PRT INTERVAL 2			Yes ____ No ____	
4.e.15	SIG PROC +5V PS			Yes ____ No ____	V
4.e.16	SHORT PULSE, LIN CHAN NOISE			Yes ____ No ____	
4.e.17	SHORT PULSE, LOG CHAN NOISE			Yes ____ No ____	
4.e.18	LONG PULSE, LIN CHAN NOISE			Yes ____ No ____	
4.e.19	LONG PULSE, LOG CHAN NOISE			Yes ____ No ____	
4.e.20	IDU TST DETECTION			Yes ____ No ____	
4.e.21	+5V RECEIVER PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	

4.e.22	±18V RECEIVER PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.22	-9V RECEIVER PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.23	+9V RECEIVER PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.24	±15V A/D CONV PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.25	+5V A/D CONV PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.26	-5.2V A/D CONV PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.e.27	+5V REC PROT PS	OK ___ FAIL ____	OK ___ FAIL ____	Yes ____ No ____	
4.f.1	CAL #			Yes ____ No ____	DB
4.j(7).1	RDASOT Receiver Diagnostic	PASS ____ FAIL ____	PASS ____ FAIL ____	Yes ____ No ____	
4.j(7).2	NOTES from RDASOT Receiver Diagnostics			Yes ____ No ____	
4.k(6)	+18 PS1			Yes ____ No ____	Volts
4.k(7)	-18 PS1			Yes ____ No ____	Volts
4.k(10)	+5V PS5			Yes ____ No ____	Volts

4.k(11)	-9V PS4			Yes ____ No ____	Volts
4.k(14)	+15V PS8			Yes ____ No ____	Volts
4.k(15)	-15V PS8			Yes ____ No ____	Volts
4.k(16)	+5V PS2			Yes ____ No ____	Volts
4.k(17)	+9V PS6			Yes ____ No ____	Volts
4.k(18)	-5.2V PS7			Yes ____ No ____	Volts
4.k(19)	+5V PS9			Yes ____ No ____	Volts

5. BASELINE RDA.

a. Equipment, tools, and supplies required:

	Description	Quantity
(1)	Screwdriver set, Phillips	1
(2)	RMS printer	1
(3)	RMS printer power cable	1
(4)	RMS printer communications cable	1
(5)	Printer paper, 8 ½ by 11-inch	100 sheets
(6)	Labels for waveform printouts	1
(7)	Oscilloscope	1
(8)	Oscilloscope probes	4
(9)	Cable, BNC-to-BNC, RG58, 6 to 8 feet	2
(10)	Crystal detector	1
(11)	Termination, 50 ohm, BNC type	1
(12)	BNC T-connector	1
(13)	SMA male-to-N female adapter	1
(14)	SMA male-to-BNC female adapter	1
(15)	Torque wrench, $5/_{16}$-inch, 5-15 inch-pounds	1

b. Record data from the following steps in the “Pre-Mod Results column” of TABLE 5: CHANNEL 1 RDA BASELINE (for channel 1) beginning on page A40 or TABLE 6: CHANNEL 2 RDA BASELINE (for channel 2) beginning on page A43.

c. Channel setup.

(1) Ensure that the channel of the RDA being baselined is the controlling channel.

(2) Ensure that the RDA is operating free of alarms and all critical parameters within specified operating ranges.

(3) Ensure that Volume Coverage Pattern (VCP) 21 is operating.

(4) Ensure that the channel is in the OPERATE mode.

(5) Allow the system to operate for at least one VCP.

d. From the MMI main menu display the tower utilities status screens by entering the command **DIPD** with **TOW** parameter. Record the data for 5.d.1 through 5.d.38. To view more tower utilities data, change to the next screen by entering the page forward command **PAGF**. Return to the main menu on the MMI by entering the **MAIN** command.

e. From the MMI main menu display the receiver status screen by entering the command **DIPD** with **REC** parameter. Record the data for 5.e, signal processor +5V Power Supply. Return to the main menu on the MMI by entering the **MAIN** command.

f. Observe the VME power supply status lights and record the power supply status (color of lights) for the ±12 and +5V Power supplies.

g. Measure and record RDA power supply outputs.

(1) Connect the RMS to the oscilloscope.

WARNING

High voltages are present in or near this equipment when energized. Death on contact may result if personnel fail to observe proper safety procedures.

(2) Open the rear left RDA cabinet door and locate the appropriate power supplies. Refer to TI 6345.1, volume 7, figure 4-2.3 for power supply locations.

(3) Verify that the red power ON indicator for PS2 and PS3 are illuminated.

(4) Attach the ground reference of the oscilloscope to the power supply-mounting rail.

(5) Attach a scope probe to +28V PS1 +V terminal lug. Adjust oscilloscope to display the signal (5.00 v/division, zero ref on lowest dotted horizontal line, 2.00 μs). Print the image and label with the proper label. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 5.g(5).

(6) Attach a scope probe to +15V PS2 +V terminal lug. Adjust oscilloscope to display the signal (5.00 v/division, zero ref on center horizontal line, 2.00 μs). Print the image and label with the proper label. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 5.g(6).

(7) Attach a scope probe to -15V PS2 -V terminal lug. Adjust oscilloscope to display the signal (5.00 v/division, zero ref on center horizontal line, 2.00 μs). Print the image and label with the proper label. Save recorded waveforms for test report. Record the +18V PS1 voltage peak value for step 5.g(7).

MODIFICATION PROCEDURES

(8) Attach a scope probe to +5V PS3 +V terminal lug. Adjust oscilloscope to display the signal (1.00 v/division, zero ref on lowest dotted horizontal line, 2.00 μs). Print the image and label with the proper label. Save recorded waveforms for test report. Record the +5V PS3 voltage peak value for step 5.g(8).

h. Remove all test equipment and close all cabinet doors.

ATTACHMENT 1

MODIFICATION PROCEDURES

TABLE 5: CHANNEL 1 RDA BASELINE

Reference Paragraph	Instruction	Channel 1 RDA Pre-Mod Results	Channel 1 RDA Post-Mod Results	Significant Deviations?	Units
5.d.1	AC #1 COMP	OK _____ SHUTOFF ____	OK _____ SHUTOFF ____	Yes ____ No ____	
5.d.2	AC #2 COMP	OK _____ SHUTOFF ____	OK _____ SHUTOFF ____	Yes ____ No ____	
5.d.3	AC #1 Air Temp			Yes ____ No ____	Deg C
5.d.4	AC #2 Air Temp			Yes ____ No ____	Deg C
5.d.5	AC #1 Filter	OK _____ DIRTY_____	OK _____ DIRTY_____	Yes ____ No ____	
5.d.6	AC #2 Filter	OK _____ DIRTY_____	OK _____ DIRTY_____	Yes ____ No ____	
5.d.7	Power Transfer Switch	AUTO _____ MANUAL_____	AUTO _____ MANUAL_____	Yes ____ No ____	
5.d.8	Power Source	UTIL_____ GEN_____	UTIL_____ GEN_____	Yes ____ No ____	
5.d.9	Generator Battery Voltage	OK _____ LOW_____	OK _____ LOW_____	Yes ____ No ____	
5.d.10	Gen Engine	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.11	Gen Volt/Freq	AVAIL_____ NOT AVAIL____	AVAIL_____ NOT AVAIL____	Yes ____ No ____	
5.d.12	Util Volt/Freq	AVAIL_____ NOT AVAIL____	AVAIL_____ NOT AVAIL____	Yes ____ No ____	
5.d.13	Gen Shelter	OK_____ FIRE_____	OK_____ FIRE_____	Yes ____ No ____	
5.d.14	Gen Shelter Fire System	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.15	Gen Shelter Temp			Yes ____ No ____	Deg C

MODIFICATION PROCEDURES

5.d.16	Gen Fuel Level			Yes ____ No ____	%
5.d.17	Gen Maint Req'd	YES_____ NO_____	YES_____ NO_____	Yes ____ No ____	
5.d.18	Equipment Shelter	OK_____ FIRE_____	OK_____ FIRE_____	Yes ____ No ____	
5.d.19	Equip Shelter Fire System	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.20	Equipment Shelter Temp			Yes ____ No ____	Deg C
5.d.21	Radome Hatch	OPEN _____ CLOSED_____	OPEN _____ CLOSED_____	Yes ____ No ____	
5.d.22	Radome Air Temp			Yes ____ No ____	Deg C
5.d.23	Outside Air Temp			Yes ____ No ____	Deg C
5.d.24	XMTR Air Temp			Yes ____ No ____	Deg C
5.d.25	Aircraft Lighting	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.26	Site Security	OK _____ ALARM_____	OK _____ ALARM_____	Yes ____ No ____	
5.d.27	Security Equip	OK _____ DISABLED_____	OK _____ DISABLED_____	Yes ____ No ____	
5.d.28	Security System	OK _____ DISABLED_____	OK _____ DISABLED_____	Yes ____ No ____	
5.d.29	DAU TEST 0			Yes ____ No ____	Range 7-11
5.d.30	DAU TEST 1			Yes ____ No ____	RANGE 118-136
5.d.31	DAU TEST 2			Yes ____ No ____	RANGE 221-252
5.d.32	UART	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	

5.d.33	MC +28V PS			Yes ____ No ____	V
5.d.34	MC +15V PS			Yes ____ No ____	V
5.d.35	MC + 5V PS			Yes ____ No ____	V
5.d.36	MC –15V PS			Yes ____ No ____	V
5.d.37	CHAN IN CONTROL	YES_____ NO_____ N/A_____	YES_____ NO_____ N/A_____	Yes ____ No ____	
5.d.38	INT PROC RESPONSE	YES_____ NO_____ N/A_____	YES_____ NO_____ N/A_____	Yes ____ No ____	
5.e	Sig Proc +5V PS			Yes ____ No ____	V
5.f	VME Power Supply Light Colors	+12V _____ -12V _____ +5V _____	+12V _____ -12V _____ +5V _____	Yes ____ No ____	Color of light
5.g(5)	+28V PS1			Yes ____ No ____	V
5.g(6)	+15V PS2			Yes ____ No ____	V
5.g(7)	-15V PS2			Yes ____ No ____	V
5.g(8)	+5V PS3			Yes ____ No ____	V

TABLE 6: CHANNEL 2 RDA BASELINE

Reference Paragraph	Instruction	Channel 1 RDA Pre-Mod Results	Channel 1 RDA Post-Mod Results	Significant Deviations?	Units
5.d.1	AC #1 COMP	OK _____ SHUTOFF ____	OK _____ SHUTOFF ____	Yes ____ No ____	
5.d.2	AC #2 COMP	OK _____ SHUTOFF ____	OK _____ SHUTOFF ____	Yes ____ No ____	
5.d.3	AC #1 Air Temp			Yes ____ No ____	Deg C
5.d.4	AC #2 Air Temp			Yes ____ No ____	Deg C
5.d.5	AC #1 Filter	OK _____ DIRTY_____	OK _____ DIRTY_____	Yes ____ No ____	
5.d.6	AC #2 Filter	OK _____ DIRTY_____	OK _____ DIRTY_____	Yes ____ No ____	
5.d.7	Power Transfer Switch	AUTO _____ MANUAL_____	AUTO _____ MANUAL_____	Yes ____ No ____	
5.d.8	Power Source	UTIL_____ GEN_____	UTIL_____ GEN_____	Yes ____ No ____	
5.d.9	Generator Battery Voltage	OK _____ LOW_____	OK _____ LOW_____	Yes ____ No ____	
5.d.10	Gen Engine	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.11	Gen Volt/Freq	AVAIL_____ NOT AVAIL____	AVAIL_____ NOT AVAIL____	Yes ____ No ____	
5.d.12	Util Volt/Freq	AVAIL_____ NOT AVAIL____	AVAIL_____ NOT AVAIL____	Yes ____ No ____	
5.d.13	Gen Shelter	OK_____ FIRE_____	OK_____ FIRE_____	Yes ____ No ____	
5.d.14	Gen Shelter Fire System	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.15	Gen Shelter Temp			Yes ____ No ____	Deg C

5.d.16	Gen Fuel Level			Yes ____ No ____	%
5.d.17	Gen Maint Req'd	YES_____ NO_____	YES_____ NO_____	Yes ____ No ____	
5.d.18	Equipment Shelter	OK_____ FIRE_____	OK_____ FIRE_____	Yes ____ No ____	
5.d.19	Equip Shelter Fire System	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.20	Equipment Shelter Temp			Yes ____ No ____	Deg C
5.d.21	Radome Hatch	OPEN _____ CLOSED_____	OPEN _____ CLOSED_____	Yes ____ No ____	
5.d.22	Radome Air Temp			Yes ____ No ____	Deg C
5.d.23	Outside Air Temp			Yes ____ No ____	Deg C
5.d.24	XMTR Air Temp			Yes ____ No ____	Deg C
5.d.25	Aircraft Lighting	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.26	Site Security	OK _____ ALARM_____	OK _____ ALARM_____	Yes ____ No ____	
5.d.27	Security Equip	OK _____ DISABLED_____	OK _____ DISABLED_____	Yes ____ No ____	
5.d.28	Security System	OK _____ DISABLED_____	OK _____ DISABLED_____	Yes ____ No ____	
5.d.29	DAU TEST 0			Yes ____ No ____	Range 7-11
5.d.30	DAU TEST 1			Yes ____ No ____	RANGE 118-136
5.d.31	DAU TEST 2			Yes ____ No ____	RANGE 221-252

5.d.32	UART	OK _____ FAIL_____	OK _____ FAIL_____	Yes ____ No ____	
5.d.33	MC +28V PS			Yes ____ No ____	V
5.d.34	MC +15V PS			Yes ____ No ____	V
5.d.35	MC + 5V PS			Yes ____ No ____	V
5.d.36	MC –15V PS			Yes ____ No ____	V
5.d.37	CHAN IN CONTROL	YES_____ NO_____ N/A_____	YES_____ NO_____ N/A_____	Yes ____ No ____	
5.d.38	INT PROC RESPONSE	YES_____ NO_____ N/A_____	YES_____ NO_____ N/A_____	Yes ____ No ____	
5.e	Sig Proc +5V PS			Yes ____ No ____	V
5.f	VME Power Supply Light Colors	+12V _____ -12V _____ +5V _____	+12V _____ -12V _____ +5V _____	Yes ____ No ____	Color of light
5.g(5)	+28V PS1			Yes ____ No ____	V
5.g(6)	+15V PS2			Yes ____ No ____	V
5.g(7)	-15V PS2			Yes ____ No ____	V
5.g(8)	+5V PS3			Yes ____ No ____	V

6. BASELINE RPG.

a. Equipment, tools and supplies required:

	Description	Quantity
(1)	RMS printer	1
(2)	RMS printer power cable	1
(3)	RMS printer communications cable	1
(4)	Printer paper, 8 ½ by 11-inch	5 sheets
(5)	Labels for waveform printouts	1
(6)	Oscilloscope	1
(7)	Oscilloscope probes	4
(8)	Cable, BNC-to-BNC, RG58, 6 to 8 feet	2
(9)	Crystal detector	1
(10)	Termination, 50 ohm, BNC type	1
(11)	BNC T-connector	1
(12)	SMA male-to-N female adapter	1
(13)	SMA male-to-BNC female adapter	1
(14)	Torque wrench, $^{5}/_{16}$-inch open end, 5-15 in. lbs.	1

b. Record data from the following steps in the Pre-Mod Results column of TABLE 7: CHANNEL 1 RPG BASELINE (for channel 1) beginning on page A47 or TABLE 8: CHANNEL 2 RPG BASELINE(for channel 2) beginning on page A47.

c. Channel setup.

(1) Ensure that the channel of the RPG being baselined is the controlling channel.

(2) Ensure that the RPG is operating free of alarms and all critical parameters within specified operating ranges.

(3) Ensure that Volume Coverage Pattern (VCP) 21 is operating.

(4) Ensure that the channel is in the OPERATE mode.

d. Allow the system to operate for at least one VCP.

MODIFICATION PROCEDURES

e. Open the left front door and observe the VME power supply (UD21A4) status lights and record the power supply status (color of lights) for the ±12 and +5V Power supplies. Close the left front door.

f. Measure and record RPG power supply output.

(1) Connect the RMS printer to the oscilloscope.

WARNING

High voltages are present in or near this equipment when energized. Death on contact may result if personnel fail to observe proper safety procedures.

(2) Open the front right RPG cabinet door and locate the appropriate 28V PS1. Refer to TI 6345.1, volume 11, figure 1-2.1 for power supply location.

(3) Attach the ground reference of the o-scope to the power supply-mounting rail.

(4) Attach a scope probe to one of the +28V PS1 +V terminal lugs (TB2-1 thru TB2-3) on the left side of the terminal strip located on the rail next to the power supply. Adjust oscilloscope to display the signal (5.00 v/division, zero ref on lowest dotted horizontal line, 2.00 μs). Print the image and label with the proper label. Save recorded waveforms for test report.

g. Remove all test equipment and close all cabinet doors.

TABLE 7: CHANNEL 1 RPG BASELINE

Reference Paragraph	Instruction	Channel 1 RPG Pre-Mod Results	Channel 1 RPG Post-Mod Results	Significant Deviations?	Units
6.e	VME Power Supply Light Colors	+12V _____ -12V _____ +5V _____	+12V _____ -12V _____ +5V _____	Yes ____ No ____	Color of light
6.f(4)	+28V Power Supply			Yes ____ No ____	V

TABLE 8: CHANNEL 2 RPG BASELINE

Reference Paragraph	Instruction	Channel 2 RPG Pre-Mod Results	Channel 2 RPG Post-Mod Results	Significant Deviations?	Units
6.e	VME Power Supply Light Colors	+12V _____ -12V _____ +5V _____	+12V _____ -12V _____ +5V _____	Yes ____ No ____	Color of light
6.f(4)	+28V Power Supply			Yes ____ No ____	V

7. INSTALL RMS RACK AND INTERNAL EQUIPMENT.

a. Materials to be installed:

	Description	Quantity
(1)	RMS cabinet assembly (U1)	1
(2)	Anchors, RM-38 3/8-inch	4
(3)	Bolts, 3/8-inch x 16 x 3 ¼-inch	4
(4)	Washers, 3/8-inch x 7/8-inch x 14 gauge	4
(5)	Opto Power Supply (1A17 and 1A18)	2
(6)	Uninterruptible power supply (1A9)	1
(7)	Computer, rack mounted (1A8)	1
(8)	NemaSoft Paragon sentinel key (1A8A1)	1
(9)	Printer communications cable (NR0C330802)	1
(10)	Opto drawer, channel 2 (1A7)	1
(11)	Opto drawer, channel 1 (1A6)	1
(12)	Printer (1A3)	1
(13)	Monitor (1A2)	1

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Floor marking tool (3/8 x 5-inch bolt)	1
(2)	Hammer (24 to 40 ounce)	1
(3)	Center punch tool	1
(4)	Drill, 3/8-inch hammer	1
(5)	Drill bit, ½-inch masonry	1
(6)	Drill stop collar set	1
(7)	Shop vacuum	1
(8)	Cleaning supplies	1

	Description	Quantity
(9)	Ramset/Red Head anchor setting tool	1
(10)	Socket set, long handle with 9/16-inch socket	1
(11)	Screwdriver, medium size, flat blade	1

c. Inspection.

(1) For each item, inspect for damage or loose parts (screws, etc.) from shipping and handling before installation. If any item is damaged take corrective action to repair or replace the item.

(2) Ensure that the installation area and equipment being installed is cleaned before installation.

CAUTION

Do not apply power to the cabinet until directed and all steps prior to that direction are completed. Applying power before directed may cause serious injury or death as the unit was shipped with loose power cables.

d. Secure RMS cabinet to floor.

(1) Place the RMS cabinet assembly (U1) in its location to be installed (left side flush with channel 2 RPG cabinet UD21, rear of RMS cabinet toward receiver cabinet UD4).

NOTE

The two Velcro straps shipped in the bottom of the RMS cabinet need to remain in the cabinet for use to secure the uninterruptible power supply.

(2) For each of the four enlarged holes in the bottom of the RMS that will be used for anchoring, place the marking tool in the hole. Keeping the marking tool straight, tamp the marking tool with the hammer to make a mark in the floor tile.

(3) Move the RMS cabinet to allow access for drilling the holes.

WARNING

Always wear safety glasses and other necessary protective devices or apparel when installing or working with anchors.

(4) Set up the drill with the ½-inch masonry bit and the drill stop collar in order to drill a 1 5/8-inch deep hole.

(5) Use the center punch tool and hammer to further mark the center of the hole.

(6) Drill the four holes.

NOTE

Reinforcement bars are present in the concrete and are impossible to drill through. Ensure that at least two holes diagonal from each other are successful for a secure installation.

(7) Use the shop vacuum to clean out the drilled holes and floor cleaning supplies to clean the floor.

(8) Before installing the anchors in the floor, expand them slightly with the anchor setting tool and the hammer. This will help prevent the anchors from falling into the hollow area below the floor.

(9) Place an anchor in each hole and hammer flush with the floor.

NOTE

There is a hollow space below the floor. Keep an eye on the anchor as it is being expanded and ensure that it does not sink below floor level. If the anchor starts to sink, thread a bolt into the anchor and pull it back up before continuing to expand the anchor.

(10) Expand each anchor with the setting tool and hammer. Anchor is properly expanded when the shoulder of the setting tool is flush with the top of the anchor.

(11) Replace the RMS cabinet to its location.

(12) Install a washer on each bolt. Insert each bolt into a mounting hole and secure into its anchor using the socket set with the 9/16-inch socket.

CAUTION

DO NOT APPLY POWER TO THE CABINET AS POWER WIRES ARE LOOSE INSIDE THE CABINET. APPLYING POWER TO THE CABINET IN THIS STATE WILL CAUSE SERIOUS INJURY OR DEATH.

e. Install opto power supplies.

(1) Place each opto power supply in its mounting location. The key switch on each power supplies is at the rear of the cabinet.

(2) Using the flat blade screwdriver, screw the power supply's two captive screws into the base of the cabinet.

(3) Attach the three wires of the opto power cables (already installed in the cabinet) to their respective power supply's AC terminal block. The green ground wire attaches to the outside ground terminal. For the two AC wires, the brown wire attaches to the center terminal and the blue wire attaches to the outside terminal.

MODIFICATION PROCEDURES

(4) Attach the four wires of the opto power cables (already installed in the cabinet) to their respective power supply's 24VDC terminal block. The red wire attaches to the outside + terminal. The white wire attaches to the inside + terminal. The black wire (paired with the red wire) attaches to the inside – terminal. The black wire (paired with the white wire) attaches to the outside – terminal.

(5) Inspect all connections and ensure that no bare wires are exposed from any terminal.

f. Install the uninterruptible power supply (UPS).

(1) Open up the two Velcro straps located in the bottom of the RMS cabinet, but do not remove them from the cabinet.

(2) Place the uninterruptible power supply in the bottom center of the RMS cabinet laying on its right side with the feet to the left. The front of the UPS faces the front of the RMS cabinet and lines up with the front edge.

(3) Secure the UPS to the cabinet using the two Velcro straps.

(4) Plug the female end of the UPS power input cable (already installed in the cabinet) into the VAC In male connector, J6. The male end of this cable should already be plugged into the 10-outlet power strip (non-ups) mounted on the left side in the inside rear of the RMS cabinet.

(5) Plug the DB9M end of the UPS communications cable (already installed in the cabinet) into the U-TALK connector, J5, on the back of the UPS. The other end of this cable should already be plugged into the bottom port of the rear mounted MOXA communications unit (U1A12J40) via the DB9-25 converter.

WARNING

Do not turn on the UPS. Power cables partially connected could cause serious injury or death.

(6) Plug the male end of the UPS power strip power cable (located loose in bottom center of rack) into the left most (as viewed from the rear) VAC out connection, J2.

g. Install computer.

(1) Slide the computer into the rack using the lowest available sliding rails.

(2) Plug the computer power cable (already installed in the cabinet) into the selectable input connector, J1, on the computer. Verify that the switch next to the selectable input is set to 115.

(3) Remove the cable clamp from the back of the computer and use it to secure the computer power cable to the computer in the same screw hole. Loop the cable such that there will not be any strain on the cable. Ensure that the computer can be fully extended on the slide rails without pulling the cable.

(4) Route the keyboard (already installed in the cabinet) cable from the keyboard drawer to the rear of the cabinet and down to the computer. Plug the connector into the keyboard port J3.

(5) Use a small white tie wrap and secure the keyboard cable to the power cable about two inches above the cable clamp.

(6) Attach the NemaSoft Paragon sentinel key to the LPT1 port (J5) on the back of the computer.

(7) Attach the printer cable to the back of the ParagonTNT key located on the LPT1 port (J5). Route the cable up to the printer shelf area.

(8) Route the computer mouse (already installed in the cabinet) cable from the keyboard drawer to the rear of the cabinet and down to the computer. Plug the connector into the computer mouse port J6.

(9) Connect the OPTO communications (already installed in the cabinet) to the opto board in the computer – port J9.

(10) Connect the telephone dial cable (already installed in the cabinet) to the lower connector on the modem in the computer, port J11.

(11) Connect the MOXA communications cable (already installed in the cabinet) to the MOXA card in the computer, port J16.

h. Install channel 2 opto drawer.

(1) Slide the channel 2 opto drawer into the rack using the sliding rails just above the computer.

(2) Starting at the bottom and working up, connect all cables (already installed in the cabinet) to the back of the opto drawer on its I/O panel, ports J54 through J63. The J59 is a spare and does not have a cable connected.

i. Install channel 1 opto drawer.

(1) Slide the channel 1 opto drawer into the rack using the sliding rails just above channel 2 opto drawer.

(2) Starting at the bottom and working up, connect all cables (already installed in the cabinet) to the back of the opto drawer on its I/O panel, ports J43 through J53.

j. Install printer.

(1) Place the printer on the printer shelf.

(2) Connect the printer power cable to the back of the printer. Plug it into the non-ups protected power strip in the outlet below where the UPS is plugged in. Place the transformer block on the printer shelf to the far left (non-ups power supply side) behind the printer. Secure the cable with tie wraps.

k. Install monitor.

(1) Pull the monitor power supply cable (already installed in the cabinet) out the front of the monitor cage

CAUTION

Installation of the monitor requires two people due to the weight of the monitor

(2) While one person holds the monitor, have the second person plug the monitor power cable into the back of the monitor. Then feed the monitor data cable though the monitor cage and out the lower back center.

(3) Place the monitor in the monitor cage ensuring that it does not sit on top of any cables.

(4) Use the two Velcro monitor tie straps (already installed in the monitor cage) to secure the monitor.

(5) Route the monitor data cable down to the computer and connect to the monitor port 1A8J8.

(6) Use a small tie wrap to secure the mouse cable to the monitor cable about 1 inch from the computer connections.

8. INSTALL CONDUIT AND CIRCUIT BREAKER FOR MAIN POWER AND INDICATOR LAMP.

a. Materials to be installed:

	Description	Quantity
(1)	Conduit box	As Required (AR)
(2)	Concrete screws, hex head 3/16 x 1 ¼-inch	AR
(3)	Conduit, ¾-inch x 10 feet	AR
(4)	Conduit connectors, ¾-inch	AR
(5)	Ground bushings, ¾-inch	AR
(6)	Conduit hangers, ¾-inch	AR
(7)	Flex conduit	AR
(8)	Flex conduit connectors with ground	AR
(9)	12 gauge THHN stranded wire (green)	AR

	Description	Quantity
(10)	12 gauge THHN stranded wire (white)	AR
(11)	12 gauge THHN stranded wire (black)	AR
(12)	Indicator lamp	1
(13)	Circuit breaker	1
(14)	Electrical box covers	AR

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Hammer drill	1
(2)	Carbide drill bit 5/32-inch	1
(3)	Stop collar set	1
(4)	Socket set	1
(5)	Conduit cutter	1
(6)	Conduit bender and handle	1
(7)	Hacksaw	1
(8)	Handi-cut conduit cutter	1
(9)	Level	1
(10)	Fish tape	1
(11)	Rubber gloves	2
(12)	Wire grease	AR

c. Mount electrical boxes.

(1) Using an electrical box as a template, mark the location for two mounting screws.

(2) Using the hammer drill with a 5/32-inch carbide drill bit and a stop collar set to a depth of 1 ½-inch, drill each of the two holes for the electrical box mounting.

(3) Secure the electrical box to the ceiling (or wall) with concrete screws.

d. Hang rigid conduit.

CAUTION

Before working inside the breaker box, coordinate a shutdown with the NWS and MCC. Shut down the system and remove all incoming power by switching off the appropriate breakers.

(1) Using instructions with the conduit cutter and conduit bender, cut and bend conduit as needed to fit between each electrical box.

(2) Use the conduit connectors and ground bushings to connect the conduit to the electrical boxes. Ensure that the screws on the ground bushings will be accessible for later installation of the ground wire.

(3) Use the concrete screws and conduit hangers to secure the conduit to the ceiling/wall as appropriate.

e. Hang flex conduit.

(1) Shut down the RMS computer and turn off all components. Place the UPS on the OFF position. Turn OFF the switch on the UPS power switch. Turn OFF the main power switch on the RMS cabinet. Unplug the RMS from the temporary power source.

(2) Remove the temporary power plug for the RMS cabinet that comes out of the AC Input connector on top of the RMS.

(3) Measure and cut the appropriate amount of flex conduit needed. Be sure to leave enough slack for small movements of the RMS rack.

(4) Use the flex conduit connectors with ground connectors to connect the flex conduit to the rack and electrical box.

(5) Add ground wire (green) to ground connectors on the outside of the flex conduit.

f. Connect power.

(1) Using the fish tape and wire grease, pull the three wires (green, white and black) from the breaker box to the RMS rack.

(2) Connect the three wires in the RMS cabinet where the temporary plug was removed.

(3) Using the fish tape and wire grease, pull the three (green, white and black) from the indicator lamp box to the RMS rack.

(4) Install the indicator lamp.

(5) Use the ground wire (green) to connect the ground bushings together in each of the electrical boxes.

ATTACHMENT 1 (CONTINUED)

MODIFICATION PROCEDURES

(6) Select the proper location for the RMS circuit breaker. Install the breaker and complete the wiring of the neutral and hot wires.

(7) Connect the ground wire (green) to the ground bar.

(8) Inspect all connections. Ensure that wires are connected to the proper points and that no connections are loose or wires exposed.

WARNING

Turning on the main power will allow lethal voltages to be applied to the system. Ensure that no one is in contact with the system when main power is applied.

(9) Switch the RMS main power switch on the front of the RMS to OFF.

(10) Turn the main breaker to ON and then the RMS breaker to ON.

(11) Switch the RMS main power switch to ON. The UPS should indicate that batteries are being charged.

(12) Turn the UPS ON to supply power to the UPS power strip.

(13) Switch ON the UPS power strip. The switch should be lit.

(14) Turn ON the monitor, computer and all remaining equipment and ensure proper operation.

(15) With the RMS software executing switch the RMS to maintenance mode and verify that the indicator lamp is lit.

(16) Switch the RMS back to operate mode.

(17) Power down the RMS system and remove power by switching OFF the RMS breaker in the main power panel.

(18) Place the covers on each of the electrical boxes.

(19) Switch the RMS breaker to ON and turn on the RMS system.

MODIFICATION PROCEDURES

9. MODIFY TRANSMITTER.

a. Materials to be installed:

	Description	Quantity
(1)	Filter plate	2
(2)	XMTR digital cable (3/103W905)	2
(3)	XMTR analog cable (3/103W904)	2
(4)	Bolts, number 4-40, ½-inch	8
(5)	Nylon lock nuts, number 4-40	16
(6)	Transmitter backplanes	2
(7)	CH1 XMTR digital cable (NR0D01X103)	1
(8)	CH2 XMTR digital cable (NR0D02X003)	1
(9)	CH1 XMTR analog cable (NR0A01X103)	1
(10)	CH2 XMTR analog cable (NR0A02X003)	1

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Screwdriver, medium size, Phillips	1
(2)	Screwdriver, long, flat tip	1
(3)	Foam and/or plastic	AR
(4)	Wrench 5/16-inch	1
(5)	Cordless soldering iron	1
(6)	Solder	AR
(7)	Wrench ¼-inch	1
(8)	Nut driver 11/32-inch	1
(9)	Nut driver 7/16-inch	1
(10)	Wrench 7/16 inch	1

	Description	Quantity
(11)	Wrench 3/8-inch	1
(12)	Wrench 5/8-inch	1
(13)	SMA torque wrench 5/16-inch	1
(14)	Nut driver ¼-inch	1
(15)	Tie wraps (various sizes, color blue)	AR

c. Install modified filter plate.

(1) Power down the transmitter by performing steps 1-5c of TI 6345.1, volume 8, (NWS EHB 6-511), Transmitter Power-down Procedure 3.4.1.2.

(2) Using a Phillips screwdriver, remove the 3 covers on the top of transmitter (part number 56232-1217737-301 and 2 each of part number 56232-1217738-301) where cables enter to the top of the transmitter to the filter plate.

(3) Remove all cables connecting to the filter plate, ensuring that all cables are properly labeled.

(4) Add labels for each of the filters (FL9-FL13) on the filter plate. The FL9 has two wires attached.

(5) Remove filament power supply UD3PS1 by performing all of the steps in TI 6345.1, volume 8, (NWS EHB 6-511), procedure 7.6.13.3.

(6) Remove 280-volt power supply UD3A2 by performing all of the steps in TI 6345.1 (NWS EHB 6-511) procedure 7.6.3.3.

(7) Add foam or plastic on the shelf of the removed power supplies to prevent loose parts from falling into the transmitter.

(8) Remove cables from bottom of filter plate ensuring that all are labeled properly. A 5/16-inch wrench is necessary to remove J4, J5 and J6.

(9) Add labels for filters (FL9-FL13). The FL10 has 2 wires attached.

(10) Using the cordless soldering iron, carefully remove the wires from each filter. Using a ¼-inch wrench, remove the nut and washer from each filter and push the filter out the top of the filter plate.

(11) Using an 11/32-inch nut driver and Phillips screwdriver, remove the old filter plate by removing the bolts, nuts, washers and lock washers.

(12) Remove the J4-J7 hardware from the old filter plate and add it to the new filter plate. A 3/8-inch wrench fits the J4, J5 and J6 connectors. A 5/8-inch wrench fits the J7 connector.

MODIFICATION PROCEDURES

(13) Place the new filter plate in the transmitter. Ensure that the gasket is properly in place. Using a Phillips screwdriver, add the bolts, lock washers, and washers (that were removed with the original filter plate) from below into the capture nuts on the filter plate to secure.

(14) One at a time, for each filter, replace the filter from the top. Using a ¼-inch wrench, secure the filter with its washer and nut. Using the cordless soldering iron, solder the appropriate wire(s) back to the filter (needle nose pliers are handy to help hold the wire in place). The FL10 has 2 wires attached.

(15) Replace cables J4-J7 inside the cabinet. Use 5/16-inch SMA torque wrench for the connectors on J4, J5 and J6.

(16) Remove the rear panel of the center transmitter cabinet.

(17) Remove the provided bolt, washers and nuts from the circular connector and clamp of digital cable 3/103W905.

(18) Route the P2 ends (blue rectangle connectors that mount on the backplane) of the digital cable (3/103W905) and analog cable (3/103W904) from the left cabinet to the center cabinet along the cables from J1-J3 of the filter plate.

(19) Replace the digital cable's (3/103W905) washers and nuts with 6/32 nylon lock nuts. Using a 5/16-inch nut driver and Phillips screwdriver, install the transmitter digital cable 3/103W905 to the filter plate making sure that pin one is on the top left (when viewed from the front of the transmitter). The cable will be routed toward the back and center of the cabinet. The three ribbon cables will be on top of the digital cable 3/103W905.

(20) Using number 4-40 x ½-inch bolts and number 4-40 nylon lock nuts and the ¼-inch nut driver, install the 3/103W904 analog cable to the filter plate making sure that pin one is on the top left (when viewed from the front of the transmitter).

(21) Re-install cables J1-J3 inside the cabinet.

NOTE

Remember to add the gaskets and position the DB connectors so that the wide side is on top (when viewed from the front of the transmitter).

(22) Tie wrap the analog and digital cable to the existing cables from J1-J3 of the filter plate and route through the center cabinet.

(23) Re-install the adapters on top of the filter plate for J4 and J5 using the 5/16-inch SMA torque wrench.

(24) Re-install all cables on top of the filter plate. Use 5/16-inch SMA torque wrench for the connectors on J6.

(25) Re-install 280-volt power supply UD3A2 by performing steps 1-5 in TI 6345.1 (NWS EHB 6-511) procedure 7.6.3.4.

(26) Re-install filament power supply UD3PS1 by performing steps 1-7 in TI 6345.1 (NWS EHB 6-511) procedure 7.6.13.4.

WARNING

HIGH VOLTAGE DANGER. High voltage is exposed when powering up the transmitter with the center back panel removed. Use extreme caution to avoid contact with the transmitter. Severe injury or death may occur upon contact with high voltage.

(27) Power up the transmitter to ensure no alarms were caused by the filter plate replacement by performing step 1a-3c TI 6345.1 (NWS EHB 6-511), Transmitter Power-up Procedure 3.4.1.5.

(28) If any new alarms were created during this procedure troubleshoot the problem(s) to clear the alarms.

(29) Power down the transmitter by performing steps 1-5c TI 6345.1 (NWS EHB 6511), Transmitter Power-down Procedure 3.4.1.2.

(30) Replace two of the covers on the top of transmitter (part number 56232-1217737-301 and one of the part number 56232-1217738-301) where cables enter to the top of the transmitter to the filter plate. Leave the top cover removed for later installation of the RMS transmitter cables.

d. Install modified backplane.

(1) Perform the steps in TI 6345.1 (NWS EHB 6-511), Preliminary Operations/Safety Precautions, procedure 7.6.4.4.1.2.

(2) Remove the existing backplane by performing the steps TI 6345.1 (NWS EHB 6-511), procedure 7.6.4.4.1.3.

NOTE

Add the labels for the wires removed from the backplane.

In step 3 of procedure 7.6.4.4.1.3, use a piece of solder or a thread to help remove and replace the bolt from the top, side of backplane.

Use a 7/16-inch nut driver and wrench to remove bolts from left side of backplane.

Use a 11/32-inch nut driver to remove wires from Ex connectors. Label wires removed.

(3) Using a Phillips screwdriver, remove the red mounting brackets from the old backplane and add to the new backplane.

(4) Route the new transmitter analog and digital cables (3/103W904 and 3/103W905) to the cable area for the backplane.

(5) Replace he new backplane by performing the steps in TI 6345.1 (NWS EHB 6-511), procedure 7.6.4.4.1.4.

NOTE

Ensure that cables with ring terminals added to the backplane in step 3 do not short with other parts of the backplane. There are no cables connected to J17 and J22.

e. Install XMTR to RMS cables.

(1) Power down the transmitter by performing steps 1-5c in TI 6345.1 (NWS EHB 6-511), Transmitter Power-down Procedure 3.4.1.2.

(2) Start at the cable tray between the RDA and RPG. Route the transmitter end of the digital cable, NR0D01X103 or NR0D02X003 and analog cable, NR0A01X103 or, NR0A02X003 cables to the transmitter. Keep RMS cables on the tray as much as possible, going under existing cables. Keep the cables parallel to each other, not twisting around each other.

(3) Connect the analog then the digital cables to their connectors on the filter plate. Allow a curve in the cables to ensure proper slack. Use the medium blue tie wraps to secure both of the cables to the cable tray. Wrap the cable at about every other cross rail until reaching the area above the RDA.

(4) Route the cables in the cable tray over toward the channel's own RPG and turn the cables to go to the RMS. If any extra cable exists, go past the RMS then back to the RMS and come down above the connectors.

NOTE

Do not tie wrap these cables to the cable tray until the RDA and RCVR cables are added.

(5) Connect the cables to the appropriate connectors on the RMS cabinet.

f. Test transmitter and RMS functions.

(1) Select the transmitter status screen for the channel under test.

(2) Ensure that the appropriate voltages are displayed for the analog voltages received from the transmitter.

(3) Ensure that the digital status of the transmitter is properly displayed.

(4) Test the function of each command for the transmitter. A fault can be inserted on the transmitter to test the Fault Display Reset command.

10. MODIFY RECEIVER.

a. Materials to be installed:

	Description	Quantity
(1)	Receiver analog cable (4/104W900)	2
(2)	Bolts, number 4-40, ½-inch	8
(3)	Nylon lock nuts, number 4-40	8
(4)	Receiver terminal block (4A37)	2
(5)	Ring terminals, 22 AWG, number 10 stud, small rings	20
(6)	Channel 1 receiver analog cable (NR0A03104)	1
(7)	Channel 2 receiver analog cable (NR0A04004)	1

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Foam and/or plastic	AR
(2)	Duct tape	AR
(3)	Cardboard	AR
(4)	Receiver marking template	1
(5)	Cordless drill	1
(6)	1/8-inch drill bit	1
(7)	7/8-inch hole saw	1
(8)	Shop vacuum	1
(9)	Greenlee hydraulic punch and spacers	1
(10)	Greenlee 49.6mm punch (1 ½-inch conduit)	1
(11)	Flat file	1
(12)	Round file	1
(13)	Marking tool	1

MODIFICATION PROCEDURES

	Description	Quantity
(14)	Square	1
(15)	5/32-inch drill bit	1
(16)	Needle nose pliers	1
(17)	Copper tape	AR
(18)	Screwdrivers	AR
(19)	5/16-inch nut driver	1
(20)	Box blade	1
(21)	Socket set	1
(22)	7/16-inch wrench	1
(23)	Tie wraps (various sizes, color blue)	AR
(24)	Wire cutters	1
(25)	Crimpers	1

c. Safe system.

(1) In the Instruction Book TI 6345.1, Maintenance Instructions for Radar Data Acquisition (RDA), Doppler Meteorological Radar WSR-88D, Volume 7, (NWS EHB 6-510), paragraph 6-5.3.1, RDA Group Shutdown, perform steps 1-6 (table 6-5.2).

(2) Remove the door on the front of the receiver cabinet.

(3) Open the rear door and open the swing out panel, securing it with the rod at the top.

(4) Add a large piece of foam across middle portion of the receiver.

(5) Duct tape a plastic bag to the top of the receiver to prevent filings from falling into cabinet and equipment. Place a piece of cardboard on the plastic to catch the hot metal pieces that will fall and melt plastic.

d. Install receiver I/O connector.

(1) Use the receiver marking template to mark the location for drilling the hole. See notes on the template for the placement. Line up the hole with the center of J17 and the screws of J2 and J7.

WARNING

Wear safety goggles and gloves to prevent injury to eyes and hand during drilling.

(2) Start a 1/8-inch pilot hole through the template. After drilling enough so that the bit won't slip, remove the template and finish the pilot hole.

WARNING

A hot metal disk will fall into the cabinet area. Have the cardboard and tape fixed in such a way that it will catch the metal disk rather than having the hot disk fall onto the plastic or the technician.

(3) Use a 7/8-inch hole saw to enlarge the hole.

(4) Using a shop vacuum, clean up all of the filings on top of the cabinet.

(5) Use the Greenlee hydraulic punch and the 49.6mm punch (1 ½-inch conduit punch) with the medium height spacer to punch the I/O hole. Before punching, verify that it fits the connector (see the Greenlee instructions, if necessary.) If necessary, file down any rough edges using the round and/or flat file.

(6) Using the connector of the receiver analog cable as a template, drill the four screw mounting holes. Remove the strain relief of the cable while marking the screw holes with the drill to allow room for the drill. Use the square to make sure the connector is aligned with the front and side of the cabinet. Use a 1/8-inch drill bit for a pilot hole and the 5/32-inch bit to enlarge the hole for the screw. Drill the holes one at a time. After each hole has been drilled and before marking the next hole, place the connector with the number 6 bolts inserted in the holes drilled. Use the square again on the second hole. If necessary, file or pull off with needle nose pliers any metal around the screw holes. Replace the strain relief when finished. Vacuum the top of the cabinet.

(7) Carefully remove the plastic, taking care not to let any filings fall off. Leave the foam inside the cabinet.

(8) Add copper tape around the hole to completely seal the area when the connector is installed. Use four strips to make a square, ½ the tape on the cabinet, ½ the tape in the hole. Before adding connector, make slits in the hole area. After adding connector, poke a screw through the copper from the bottom upward. Leave the excess copper until after the connector is installed and tightened.

(9) Install the connector with pin 1 on the top left side (numbers readable from the front of the receiver). Use a flat tip screwdriver and a 5/16-inch nut driver to install the number 6 bolts with nylon nuts.

(10) Cut off the major excess copper on top of the cabinet around the connector and fill in all holes with the remaining excess copper.

(11) Route the cable after the terminal block is installed.

e. Install terminal block.

(1) Check terminal block loose parts.

(2) Use a 7/16-inch socket set and wrench to loosen the two bolts in the middle of the left side of the receiver cabinet just above the power supplies.

CAUTION

Do not completely remove the bolts or the loose hardware (spacers) will fall into the receiver.

(3) Add the terminal block and tighten the bolts. Take care that each one of the washers, on the bolt on the inside of cabinet, is on both edges of the mounting bracket.

f. Install the cable from the terminal block to the I/O connector.

(1) Route the cable down and over to the left side of the receiver (as viewed from the front of the receiver), behind the rail and into the terminal block.

(2) Screw the cable into the top of the terminal block J1 connector.

(3) Secure the cable to the rail with the tie wraps in order to reduce the strain on the circular connector.

g. Install wires from the terminal block to the power supplies.

(1) Inspect the entire length of all wires for nicks in the protective coating. If any nicks are found, add a small shrink-wrap tube over the nicked area.

(2) Remove the screws holding the three power supply-mounted slide, using the proper screwdriver. Throughout this procedure, slide in and out the power supply-mounted slides, as necessary, to gain access behind and on top of the power supplies.

(3) Start securing wires from the terminal block side. Add a stick on tie wrap base straight across and below the edge of the terminal block corner and tie wrap all wires to it. Be sure to remove all slack from wires, but do not pull the wires too tight.

(4) Wires will follow the existing cables in the system down the left side of the set of power supplies. Loosely add a tie wrap at the top row of power supplies for all wires.

(5) Remove all slack and tightly secure wires. Keep the wires together in a nice bundle and off of the metal railings.

(6) Start with the upper row of power supplies. Use an ohmmeter to ensure that the correct wires (as labeled on the terminal block) are being added to the correct power supply. Tie wrap (excessively) to the cable leading to the power. Keep the wires in a nice bundle.

(7) Using a Phillips screwdriver, remove the plastic cover over the power supply's terminals (captured nuts are in the plastic plate). Working with one wire at a time, cut to length and add a ring terminal for a number 10 stud to the wire. Add the RMS wires to the connector and secure with tie wraps.

(8) Move down to the middle row of power supplies and repeat the process of checking, cutting, adding ring terminal, and securing with tie wraps.

(9) Move down to the bottom row of power supplies and repeat the process of cutting, adding ring terminal, and securing with tie wraps.

(10) Inspect all tie wraps ensuring that all wraps are trimmed.

(11) Replace the screws holding the power supply slides to the cabinet.

h. Install receiver to RMS cables.

(1) Connect the Channel 1 or Channel 2 receiver analog cable to the receiver end. Route the cable over and above the RDA, going below all other cables and tie wrapping to the cable tray. Meet up with the transmitter cables and route to the RMS same as done with the transmitter cables.

(2) Connect the cable to the RMS cabinet.

i. Test receiver and RMS functions.

(1) Power on the receiver.

(2) In TI 6345.1, (NWS EHB 6-510), perform steps 14 and 21 (table 6-5.3) of the RDA Group Startup procedures 6-5.3.2.

(3) View RMS receiver screen and verify that all points read correctly.

(4) At RDA MMI enter **rdaup** to start the RDA software. Power up entire channel, put in control, operating, and verify no errors.

11. MODIFY RDA.

a. Materials to be installed:

	Description	Quantity
(1)	RDA analog cable (5/105W910)	2
(2)	RDA data cable (5/105W912)	2
(3)	RDA systems cable (5/105W911)	2
(4)	Screws, number 4-40, ½-inch	8
(5)	Nylon lock nuts, number 4-40	8
(6)	RDA terminal block (5A37)	2
(7)	Screws, rack mount	6
(8)	Ring terminal, 22 AWG, ¼-inch stud	2
(9)	Ring terminal, 22 AWG, #10 stud, small rings	8
(10)	RDA VME cable (5/105A1W2)	2
(11)	Jack screw package (AMP 205817-3)	2
(12)	Tie wrap bases – ¾-inch black	AR
(13)	Channel 1 RDA analog cable (NR0A05X105)	1
(14)	Channel 2 RDA analog cable (NR0A06X005)	1
(15)	Channel 1 RDA data cable (NR0C03X105)	1
(16)	Channel 2 RDA data cable (NR0C04X005)	1
(17)	Channel 1 RDA systems cable (NR0C05X105)	1
(18)	Channel 2 RDA systems cable (NR0C07X005)	1

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Foam and/or plastic	AR
(2)	Duct tape	AR
(3)	Cardboard	AR
(4)	RDA marking template	1
(5)	Cordless drill	1
(6)	1/8-inch drill bit	1
(7)	7/16-inch drill bit	1
(8)	3/32-inch drill bit	1
(9)	7/8-inch hole saw	1
(10)	Shop vacuum	1
(11)	Greenlee hydraulic punch and spacers	1
(12)	Greenlee DB25 punch kit	1
(13)	Greenlee DB15 punch kit	1
(14)	Greenlee 38.1 mm punch (1 ½-inch)	1
(15)	Cobalt-grinding bit	1
(16)	Wire brush	1
(17)	Flat file	1
(18)	Round file	1
(19)	Marking tool	1
(20)	Square	1
(21)	5/32-inch drill bit	1
(22)	Needle nose pliers	1
(23)	Copper tape	AR

MODIFICATION PROCEDURES

	Description	Quantity
(24)	Screwdrivers	AR
(25)	5/16-inch nut driver	1
(26)	Box blade	1
(27)	3/16-inch wrench	1
(28)	3/16-inch nut driver	1
(29)	¼-inch nut driver	1
(30)	Socket set	1
(31)	7/16-inch wrench	1
(32)	Tie wraps (various sizes, color blue)	AR
(33)	Wire cutters	1
(34)	Crimpers	1

c. Safe system.

(1) Terminate RDA application software.

(2) Power OFF RDA.

(3) Remove doors on the front of both RDA cabinets.

(4) Duct tape the plastic inside the top of the cabinet. Use a flashlight to inspect the top of the cabinet to ensure that there are no holes between the plastic and the top of the cabinet. Tape in a piece of cardboard to catch the hot metal that may fall from the top of the cabinet when using the hole saw.

d. Create holes for I/O connectors.

WARNING

Wear safety goggles and gloves to prevent injury to eyes and hand during drilling.

(1) Use template and drill a 1/8-inch pilot hole for the center of the three connectors.

(2) Use the 7/16-inch bit to enlarge the back two holes for the DB25 punch.

(3) Use the 7/8-inch hole saw to enlarge the front hole for the circular connector.

(4) Use the shop vacuum to clean up all filings.

(5) Use the hydraulic punch and DB25 punch kit to punch the rear two holes. Take note of the direction of DB25 (wide side in back, narrow side in front) and use the square to ensure it's square with the cabinet. The spacers used are the three spacers with the 43.2mm and 61.6mm shells added. See punch kit for instructions.

(6) Use the 38.1 mm (1 ½ inch) punch to enlarge the front hole. Use the tallest spacer. See punch kit for instructions.

(7) Use the cobalt-grinding bit to enlarge the circular hole until the cable receptacle of the RDA analog cable fits. Use the receptacle and check often to ensure that the hole does not get too large.

(8) Use a drill and the wire brush (3 inch CRS end - Weiler 3H691) to remove the paint where the connectors will be installed on the inside part of the RDA.

CAUTION

Take extreme care not to hit the plastic with the wire brush.

(9) Use the shop vacuum to clean up all filings.

(10) Using the connector as a template, drill holes for the four mounting screws. Remove the cable clamp to provide space for the drill. First, start with the 3/32-inch drill bit, then enlarge to a 1/8-inch drill bit for the number 4 screws. Drill one hole at a time, marking the next hole with the connector and all possible screws in place.

(11) Vacuum the top of the cabinet. Carefully remove the plastic and duct tape.

(12) Add copper tape around each of the connectors. Slice so that connectors can be inserted.

(13) Add foam to catch any possible falling hardware.

(14) Start with the rear cable, 5/105W912. Remove the right side jackscrew hardware. Loosen, but do not remove the left side hardware. Install the cable by sliding the cable in and tightening the left side a little, then add a jackscrew on the right side. Use the 3/16-inch wrench and 3/16-inch nut driver to tighten the jackscrew.

(15) Add the middle cable, 5/105W911. Remove the right side jackscrew hardware. Loosen, but do not remove the left side hardware. Install cable by sliding in and tightening the left side a little, then add jackscrew on the right side. Use the 3/16-inch wrench and 3/16-inch nut driver to tighten the jackscrew.

(16) Trim off excess copper tape from around the two DB25 connectors the top of the RDA. Cut along inside base of connector (so that tape is still showing).

(17) Use a number 4 screw to poke screw holes in the copper tape for the circular connector.

MODIFICATION PROCEDURES

(18) Add the circular connector so that pin 1 is in the back left (numbers readable). Use a ¼-inch nut driver and small flat tip screwdriver to tighten the number 4 screws and nylon lock nuts.

(19) Trim off the excess copper tape from around the circular connector on top of the RDA. Use a small flat tip screwdriver to push down any remaining excess. Use a flashlight to verify that all of the holes are sealed. Add small pieces of copper tape *on top* if necessary.

(20) Wait until after terminal block is installed to route and secure wires.

e. Install terminal block.

(1) Inspect the hardware on the terminal block for tightness. Tighten if necessary.

(2) Open the rear center door of the RDA/RCVR bay.

(3) Install the terminal block in the RDA using rack mount screws. The bottom screw is in the 14th hole up from the center division. This makes the top hole 32nd hole down from the top of the mounting rail so that the cover plate of the terminal board is removable (below rear panel of DAU).

f. Run and secure cables from I/O on top of RDA.

(1) Cable 5/105W910. Secure the cable to the top front right rail of the center RDA/RCVR cabinet (above MMI) with tie wraps. Use the 10th hole for tie wrapping. A small flat blade screwdriver will be necessary to get the tie wrap from behind the rail. Make sure there is no strain on the cable at the top I/O panel. Feed the cable between the two RDA cabinets to the terminal block and screw the connector to the terminal block.

(2) Cables 5/105W911 and 5/105W912. Angle the two cables down in the middle of the RDA cabinets and loosely secure with a tie wrap to cable 5/105W910 half way back. Route the cables below the white ribbon cables and behind the terminal block. Loosely secure the two cables to the hole in the bottom center of the terminal block. Continue routing the cables between the cabinets and below the A16 I/O panel. Route the cables to their respective connection point (J11 and J14) on the A16 I/O panel. Loosely secure the two cables behind the J11 point ensuring that no strain will be on the cables as they enter the backshells. Go back and tightly secure the cables using tie wraps.

g. Wire terminal block to power supplies.

(1) Verify the wiring color to the correct terminal block pin.

(2) Inspect the wires for nicks in the plastic coating.

(3) Bundle wires and run back and across the cabinet divider, using two stick on tie bases.

(4) Separate the black wire for +5VPS4 (from the fuse) and run it up the center rail (nearest the rear of the MMI) with the existing black wire bundle. Where possible, thread the black wire under the existing tie wraps. Cross over to the other cabinet threading the black wire in with the bundle of wires that go to the +5VPS4 power supply. At the appropriate length, cut

and strip the wire and add a ring terminal. Remove the nut on the +VPS4 (top right of power supply). Add the ring terminal and replace the nut.

(5) Remove the rack mount screw from the power supply (PS1-PS3) shelf. Pull the shelf out.

(6) Run the remaining wires from the terminal block in a bundle up with the bundle of wires going to the PS1, PS2 and PS3 power supplies (Route behind the rail to get to the wire bundle). Secure with tie wraps to the existing bundles.

(7) Bundle the remaining wires and tie wrap to the wires going to the power supply drawer for PS1-3.

(8) Remove the mount for 28V PS1 (four screws on bottom). Run the red wire for PS1 to the bottom lug (+V 6). Cut the wire to length and add a number 10 ring terminal. Install on the lug and remount PS1 adding the four screws back on the bottom of the power supply.

(9) Run the green wire to +5V PS3. Remove the plastic shield. Measure and cut wire to length. Add a number 10 ring terminal. Install on the far left terminal of the power supply. Replace shield.

(10) Run the brown and black wire to +/- 15V PS2. Measure and cut the wire to length. Add a number 10 ring terminal. Install the brown wire to the far left terminal number 1, +15V, and black wire to terminal number 4, -15V (as counted from left).

(11) Push the power supply shelf back in and secure with rack mount screw.

h. Modify VME Unit.

(1) Remove the VME unit from the RDA.

(2) Open the rear center door.

(3) Verify that all of the cables (J1, J2, power) into the VME unit are labeled properly. Remove all of the cables using a flat tip screwdriver.

(4) Open and remove the front center door.

(5) Remove the VCI interface cable on the front of the VME unit by squeezing in the latch on the connector (cable end) and pulling off.

(6) Use a number 2 Phillips screwdriver and remove the 4 rack mount screws of the VME unit.

NOTE

Once the screws are removed, the VME unit must be supported. It has no other support.

(7) Add the DB15 connector.

MODIFICATION PROCEDURES

(a) Mark the spot for the new connector an equal distance (between J1 and J2) to the left of J2, 1 ½-inch from center and center vertically (1 ¾ inch).

(b) Make sure wires on the back are clear of the drilling area.

(c) Center tap and drill a pilot hole (1/8 inch).

(d) Enlarge the hole for the punch using a 7/16-inch drill bit.

(e) Use a DB15 punch to punch the hole. Take care to ensure that wide/narrow sides are same as J2 & J1 and that all wiring is clear from punch area. Keep punch square with top and sides.

(f) Add the 5/105A1W2 cable DB15 connector to the inside of the VME I/O panel using the jackscrews.

(8) Internal wiring of VME unit.

(a) Add a small black stick on tie wrap base to the side of the VME unit about half way between the terminal block and back I/O panel and above where capacitors would touch if pressed to side.

(b) Remove the cover to the terminal block in the side of the VME unit. The RMS wires will be added to the terminal block on the far (circuit board) side (only one wire currently attached). Loop the RMS wires over the top of the terminal block and circle back to the terminal block and attach wires to terminal block as follows:
Yellow (pin 9) to TB1 (yellow) +12V;
Black (pin 2) to TB3 (black) Signal Ref;
White (pin 12) to TB4;
Blue (pin 1) to TB5 (blue) -12V;

(c) Secure the RMS wires in the tie wrap base with a small blue tie wrap.

(d) Replace the terminal block cover.

(e) Tie wrap all of the RMS wires securely.

(f) Re-install the VME unit into the RDA.

i. Install RDA to RMS cables.

(1) Connect the RDA to RMS cable to the RDA end. Route the cable going below all other cables and tie wrapping to the cable tray. Meet up with the transmitter cables and route to the RMS same as the transmitter cables.

(2) Connect the cable to the RMS cabinet.

j. Test RDA and RMS functions.

(1) From the RMS and MMI, place the RMS in control of the system.

(2) For each screen with RDA data, request an update of the data and print the screen.

(3) Compare the values from the RMS printouts with the values shown by the RDA.

(4) For each of the power supplies, compare the actual voltage measured at the power supplies with the displayed voltage on the RMS. If any values are incorrect, adjust the zero scale and full scale values for that point to correct the offsets.

(5) Issue commands from the RMS to the RDA to verify proper execution of the commands.

12. MODIFY RPG.

a. Materials to be installed:

	Description	Quantity
(1)	RPG Terminal block (22A37)	2
(2)	Screws, rack mount	6
(3)	RPG analog cable (22/122W900)	2
(4)	RPG data cable (22/122W901)	2
(5)	RPG VME cable (21/121A4W2)	2
(6)	Jack screw package	2
(7)	Tie wrap base, small	2
(8)	Ring terminal, 22 AWG, number 10 stud	4
(9)	Channel 1 RPG system port cable (NR0C06X122)	1
(10)	Channel 2 RPG system port cable (NR0C08X022)	1
(11)	Channel 1 RPG analog cable (NR0A07X122)	1
(12)	Channel 2 RPG analog cable (NR0A08X022)	1
(13)	Channel 1 RPG data cable (NR0C01X122)	1
(14)	Channel 2 RPG data cable (NR0C02X022)	1

MODIFICATION PROCEDURES

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Needle nose pliers	1
(2)	Screwdrivers	AR
(3)	Tie wraps (various sizes, color blue)	AR
(4)	Wire cutters	1
(5)	Crimpers	1
(6)	VME test power cord	1

c. Prepare system for modification.

(1) Power down RPG using breaker in the channel's secondary power panel.

(2) Remove both doors from the UD22/122 cabinet.

(3) Remove the filter at the bottom front of the UD122 cabinet.

(4) Remove the cable guard from the bottom rear of the UD122 cabinet.

(5) Using a large screwdriver from the rear of the UD122 cabinet, punch out the knockouts for J15 (DB25) and J16 (DB15).

d. Install terminal board.

(1) Using three rack mount screws, install the RPG terminal board in the right rear side of the UD122 cabinet with the top of the terminal block at the top of the rail. This allows room to add the DB connector to J1 on the terminal block.

e. Install cable from terminal board to I/O connector.

(1) Connect the RPG analog cable to the terminal board at J1 and then route to the center of the RPG and tie wrap to the center rail behind the 28V power supply.

(2) Install the RPG analog cable J16 end in the RPG I/O panel using jackscrews.

f. Set strapping on MPC board.

(1) Remove the MPC board UD21A3A20 by performing the steps in TI 6345.1, Volume 11, Maintenance Instructions Radar Product Generation (RPG), Doppler Meteorological Radar WSR-88D, (NWS EHB 6-520), paragraph 6-5.4.

(2) Set the strapping for the board as shown in MPC Board UD21A3A20 Strapping for the FAA RMS in TI 6345.1, volume 11, (NWS EHB 6-520), figure 6-5.9a. Switch 1 and Switch 3 should be changed.

(3) Replace the MPC board UD21A3A20 by performing the steps in TI 6345.1, (NWS EHB 6-520), paragraph 6-5.4.

g. Install RPG data cable.

(1) Install the RPG data cable to 21A8J07 panel and route to the left (as viewed from the back) cabinet.

(2) Route the cable down the left cabinet and join with the analog cable.

(3) Install the cable to the J15 end in the RPG I/O panel using jackscrews.

h. Move secondary system port cable from RPG to the RMS cabinet.

(1) Remove the W95/195 cable from J17 of the RPG cabinet.

(2) Remove the cable from the cable ladder/tray and route to the top of the RMS cabinet.

(3) Connect to the RMS cabinet.

i. Modify VME Unit.

(1) Verify that all existing cables on the back of the VME unit are labeled properly, identifying the Jnumber that the cable is attached.

(2) Remove all cables from the back of the VME unit.

(3) Remove the VCI Interface cable from the front of the VME unit by squeezing in the release levers on the top and bottom of the cable.

(4) With a pencil, mark both rails just above and below the front of the VME unit so that it can be replaced in the same location.

CAUTION

Heavy equipment. This is a two man operation.

(5) Remove the 8 rack mount screws of the VME unit and take the VME out of the rack. Use the 5/16-inch nut driver to avoid stripping the screws.

(6) Lay the VME unit on its left side (viewed from front). Remove the screws and take off the right side, noting the type of screws removed from each hole.

NOTE

A ground wire attaches the bottom rear right corner of the VME unit and the side panel.

(7) Carefully rotate the side panel to lean it next to the VME unit.

MODIFICATION PROCEDURES

(8) Install the RPG VME cable DB15 connector to J51. Have the connector on the outside (run wires through hole) and make sure the wide side is installed like the hole shape to the left. Use jackscrews to secure the cable to the VME unit.

(9) Loop the wires back and up to connect with the terminal block of the power supply.

(10) Connect the wires to the terminal block as follows:
RMS Yellow (pin 9) to TB3 (+12 volts)
RMS Black (pin 2) to TB4 (Signal Reference)
RMS Blue (pin 1) to TB5 (-12 volts)

(11) Connect the RMS white wire (pin 12) to the large lug with red wire near terminal block +5 volts.

(12) Use a modified (side cut off) small press on tie base and small tie wrap to secure the wires.

(13) Replace the side panel. Start each of the screws and then tighten.

(14) Before replacing the VME unit in the rack, use the test power cord and power up the VME. Ensure that all of the green power supply lights on the front are lit.

(15) Replace the VME unit in the rack.

NOTE

Place the VME unit in its original space - not all rack holes have been tapped for screws.

(16) Replace the cables in the front and the back of the VME unit.

(17) Route the RMS cable 22/122A37W1 from the terminal board and connect to the VME unit at J51.

j. Install wires from terminal block to power supply.

(1) Route the red and black wires down the terminal block and along the analog cable to the center of the RPG cabinet. Then follow the center rail to the terminal strip on the front rail of the RPG.

(2) Cut wires to length and add a number 10 ring terminal and secure to the appropriate lugs.

k. Install RPG to RMS analog, data, and system port interface cables.

(1) Connect the J17 end of the RPG-RMS system port cable.

(2) Connect the J16 end of the RPG-RMS analog cable.

(3) Connect the J15 end of the RPG-RMS data cable.

(4) Route the three cables together up the cable ladder and across the cable tray to the RMS, securing the cables with tie wraps as appropriate.

(5) Connect the three cables to their respective connectors on top of the RMS.

l. Test RPG and RMS functions.

(1) From the RMS and MMI, place the RMS in control of the system.

(2) For each screen with RPG data, request an update of the data and print the screen.

(3) Compare the values from the RMS printouts with the values shown by the RDA or UCP.

(4) For each of the power supplies, compare the actual voltage measured at the power supplies with the displayed voltage on the RMS. If any values are incorrect, adjust the zero scale and full scale values for that point to correct the offsets.

(5) Issue commands from the RMS to the RPG to verify proper execution of the commands.

13. INSTALL GROUND BAR.

a. Materials to be installed:

	Description	Quantity
(1)	Concrete anchors (Dynabolt HN-3817)	4
(2)	Ground bar (with cover)	1
(3)	Ground cable connectors, site specific	AR
(4)	Ground cable (site specific)	AR
(5)	Bolts, nuts and washers (site specific)	AR

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Measuring tape, 25 feet	1
(2)	Drill	1
(3)	3/16-inch drill bit	1
(4)	Hammer drill	1

MODIFICATION PROCEDURES

	Description	Quantity
(5)	3/8-inch masonry bit	1
(6)	Drill stop collar set	1
(7)	Shop vacuum	1
(8)	Hydrolic crimper set	1

c. Clear out area in corner of the communications wall near the air conditioner units.

d. Locate a place for the ground bar and mark holes for drilling. Make edge of ground bar at least 6-inch from wall so that the first lug for the main ground wire is 8 inches from the wall.

e. Use 3/16-inch bit and standard drill to make small pilot holes.

f. Use 3/8-inch masonry bit and hammer drill with stop set for about 2 ¼-inch to drill holes for the concrete anchors.

g. Install concrete anchors and ground bar.

h. Vacuum area.

i. Move the existing ground cables to the new ground bar using appropriate connectors and new cable as necessary.

14. INSTALL GPS ANTENNA.

a. Materials to be installed:

	Description	Quantity
(1)	GPS surge suppressor	1
(2)	GPS antenna	1
(3)	GPS antenna cable (NR0C320000)	1
(4)	Screw inserts and screws, #8 x 1 inch	11
(5)	Cable clamp, 1-inch	2
(6)	Cable clamp, ¼-inch	11
(7)	Cable clamps, ½-inch	5
(8)	Wall covers (for RF cable)	2
(9)	Split flex tubing, 3/8 inch x 10 feet	1

ATTACHMENT 1 (CONTINUED)

MODIFICATION PROCEDURES

	Description	Quantity
(10)	Mounting bracket	1
(11)	N-type connectors (for RF cables)	2
(12)	BNC connector	1
(13)	GPS antenna cable (NR0C160008)	1

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Hammer drill	1
(2)	½ inch x 18 inch rotary hammer drill bit	1
(3)	Electrical tape	AR
(4)	Shop vacuum	1
(5)	All weather caulking	AR
(6)	Caulk gun	1
(7)	Coax crimpers	1

c. Mount surge protector ensuring that the non-protected end faces toward the wall where the antenna cable will go though.

d. Connect the ground wire to the bar using appropriate connectors and cable.

e. Drill a hole through the wall using a 2 foot bit, ensuring to drill from the inside out at a slight downward angle.

f. Attach the GPS antenna to the outside top of the NEXRAD shelter.

(1) Drill the holes for the screw inserts and install the inserts.

(2) Use two large cable clamps to hold antenna pole.

(3) Use small cable clamps to secure the cable to the wall. Wrap electrical tape around the cable so that the clamp will hold the cable securely. Wrap the split flex tubing around the cable and secure to the wall with the larger cable clamps. Leave a drip loop at the bottom of cable below the entry point.

(4) Cut the cable at an appropriate length (or longer) so that it will reach into the shelter and connect with the surge protector.

(5) Run the cable through the cable/wall cover then run the cable through the wall into the shelter.

(6) From the inside run the cable through another cable/wall cover.

(7) Use the wall filler to fill the hole.

(8) Cut and strip the cable to length and attach an N-type connector. Connect to the surge protector.

g. Run cable from the RMS to the surge protector.

(1) Route the RMS to the surge suppressor GPS antenna cable. Run the cable with the BNC connector through the RMS top hat and its cable clamp.

(2) Connect the cable to the computer, leaving enough cable for the computer to be fully extended on its slides.

(3) Secure the cable to the data cable side of the RMS with tie wraps and pull any excess out the top of the RMS.

(4) Run the cable up into the cable tray and over the top of the channel 1 RPG cabinets to the communication wall. Secure the cable with tie wraps.

(5) Run the cable down the wall and over to the surge protector. Secure the cable with tie wraps.

(6) Cut and strip the cable to length and attach an N-type connector. Connect to the surge protector.

15. INSTALL REMOTE CABLE TO RADOME.

a. Materials to be installed: One remote RMS-Radome cable (NR0C09X002)

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Fish tape	1
(2)	Duct tape	AR

c. Coordinate with NWS and MCC for a system shutdown.

d. Test the cable before installing.

(1) Connect one end of the remote RMS–Radome cable to the RMS at J11.

(2) Connect the other end to the portable laptop test computer.

(3) On the control panel, select the RADOME position on the remote RMS switch.

(4) Set up the RMS PCANYWHERE to look for a direct connect.

(5) Run PCANYWHERE on the laptop and connect via the direct connect.

(6) After connection is proven, shutdown the computer and disconnect the cable.

e. Install cable.

(1) Shutdown the NEXRAD system according to the instruction books.

(2) Starting at the cable tray by the wall near channel 2 RDA, run the RMS end of the cable in the tray to the RMS. Follow the route of the other RMS cables.

(3) Attach the cable to the top of the RMS.

(4) Secure the cable to the cable tray and other RMS cables.

(5) From the pedestal, run the fish tape down to the NEXRAD shelter.

(6) With duct tape, attach the cable to the fish tape and pull to the Radome.

(7) After all of the slack has been removed, secure the cable to an area in the pedestal with two or more large tie wraps.

(8) Coil the remaining cable into the base of the pedestal.

f. Test the connections again using the testing procedure above.

16. INSTALL REMOTE CABLE TO POWER SHELTER.

a. Materials to be installed:One remote RMS-Power Shelter cable (NR0C10X010)

b. Equipment, tools and supplies required:

	Description	Quantity
(1)	Fish tape	1
(2)	Duct tape	AR

c. Coordinate with NWS and MCC for a system shutdown.

d. Test the cable before installing.

(1) Connect one end of the Remote RMS – Power shelter cable to the RMS at J12.

(2) Connect the other end to the portable laptop test computer.

(3) On the control panel, select the POWER SHELTER position on the remote RMS switch.

(4) Set up the RMS PCANYWHERE to look for a direct connect.

(5) Run PCANYWHERE on the laptop and connect via the direct connect.

(6) After connection is proven, shutdown the computer and disconnect the cable.

e. Install cable.

(1) Shutdown the NEXRAD system according to the instruction books.

(2) Starting at the cable tray by the wall near conduit that runs to the power shelter, run the RMS end of the cable in the cable tray to the RMS. Follow any RMS cables that may be already installed. Attach the to the top of the RMS.

(3) Secure the cable to the cable tray and other RMS cables.

(4) From the power shelter (or pull points outside), run the fish tape into the NEXRAD shelter.

(5) With duct tape, attach the cable to the fish tape and pull to the power shelter.

(6) After the cable has been pulled into the power shelter, pull all of the slack from the cable.

(7) Coil the remaining cable and store it out of walking or hazardous areas.

f. Test the connections again using the testing procedure above.

17. INSTALL TELEPHONE CABLE.

a. Materials to be installed:

Description	Quantity
One telephone cable (NR0C30X000)	1

b. Equipment, tools and supplies required:

Description	Quantity
(1) Screwdrivers	AR
(2) Wire strippers	1
(3) Telco punch	1

c. Connect the telephone cable to the DB25 connector on top of the RMS.

d. Route the cable through the cable trays to the communications wall. Follow the routing of other RMS cables.

e. Route the cable on the communications wall securing as appropriate to the punch down block.

f. Cut and strip the cable to length and punch down on the appropriate punch down blocks.

18. BASELINE TRANSMITTER. Repeat procedure 3 above for the post-mod baseline.

19. BASELINE RCVR. Repeat procedure 4 above for the post-mod baseline.

20. BASELINE RDA. Repeat procedure 5 above for the post-mod baseline.

21. BASELINE RPG. Repeat procedure 6 above for the post-mod baseline.

22. TESTING.

a. The majority of testing has been covered incrementally during installation. Perform the following to verify complete RMS functionality.

b. RMS to system console communications.

(1) From the RMS console, verify that the RMS can communicate with channel 1 RPG system console.

(2) From the RMS console, verify that the RMS can communicate with channel 1 RDA system console.

(3) From the RMS console, verify that the RMS can communicate with channel 2 RPG system console.

(4) From the RMS console, verify that the RMS can communicate with channel 2 RDA system console.

c. NEXRAD to RMS data communications.

(5) From the RMS console, verify that data from the channel 1 RPG is being transmitted by comparing data on the RMS screen to data on the channel 1 UCP console.

(6) From the RMS console, verify that data from the channel 1 RDA is being transmitted by comparing data on the RMS screen to data on the channel 1 MMI console.

(7) From the RMS console, verify that data from the channel 1 RPG is being transmitted by comparing data on the RMS screen to data on the channel 2 UCP console.

(8) From the RMS console, verify that data from the channel 1 RDA is being transmitted by comparing data on the RMS screen to data on the channel 2 MMI console.

d. RMS analog/digital communications with the NEXRAD.

(9) From the RMS console, verify that analog data is being correctly received from the channel 1 transmitter power supplies.

MODIFICATION PROCEDURES

(10) From the RMS console, verify that digital data is being correctly received from the channel 1 transmitter.

(11) From the RMS console, verify that analog data is being correctly received from the channel 1 receiver power supplies.

(12) From the RMS console, verify that analog data is being correctly received from the channel 1 RDA power supplies.

(13) From the RMS console, verify that analog data is being correctly received from the channel 1 RPG power supplies.

(14) From the RMS console, verify that analog data is being correctly received from the channel 2 transmitter power supplies.

(15) From the RMS console, verify that digital data is being correctly received from the channel 2 transmitter.

(16) From the RMS console, verify that analog data is being correctly received from the channel 2 receiver power supplies.

(17) From the RMS console, verify that analog data is being correctly received from the channel 2 RDA power supplies.

(18) From the RMS console, verify that analog data is being correctly received from the channel 2 RPG power supplies.

(19) From the RMS console, verify that digital commands can be sent to each control on the channel 1 transmitter.

(20) From the RMS console, verify that digital commands can be sent to each control on the channel 2 transmitter.